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MAGAZINE

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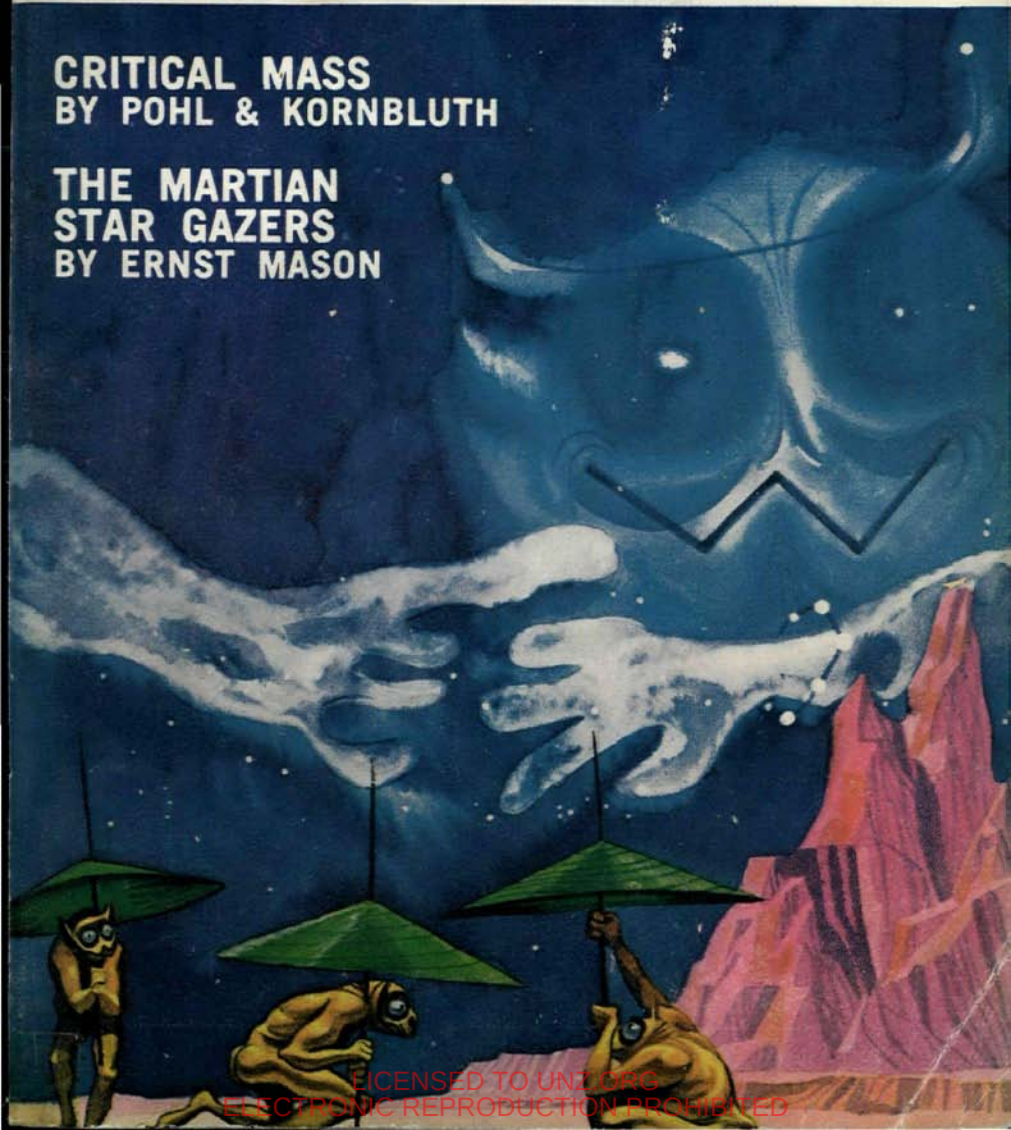
CRITICAL MASS
BY POHL & KORNBLUTH

THE MARTIAN STAR GAZERS
BY ERNST MASON



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Cover by GAUGHAN illustrating The Martian Star-Gazers
Next issue (April) on sale February 15th.

M-81 in Ursa Major (the Big Dipper) is like our own galaxy but "older" — spiral arms more tightly wound, less gas and dust. M-81 was one of the first remote galaxies in which individual stars were located.

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WHAT'S IN IT FOR US?

A persistently irritating question which science-fiction writers have to face is this: What's the use of it all?

Suppose, the questioners say indulgently, that all this nonsense you people talk about may, somehow or other, come true. Suppose we can send spaceships to other planets. Suppose we can even get them back. Well, why bother?

This kind of question has got a little easier to take in the last few years — since the A-bomb and the first satellites. Will he, nill he, the average man is up against the fact that we *will* be in space before long. But it's an annoying question, and there is a tendency to frame the answer in terms of what people want to hear.

We need bases on the Moon, we say, because from the Moon we can with great telescopes spy out everything the Russians are doing here on Earth. We need manned satellites, we say, because from them we can "drop" nuclear charges on any enemy. We say we need the planets for colonization, to make room for the billions of surplus population Earth cannot support. We point out that there is a chance that all the surface of Venus is one great steamy lake of petroleum . . . and isn't it great that we should have all the oil we'll ever want so conveniently located, right there in the sky?

This is the kind of answer that seems to make sense to laymen. But these are answers that don't indeed answer much. The facts they leave out are as important as the probable truths they contain.

First, it is true that from a station on the near side of the Moon we can watch what happens in Russia, or anywhere on Earth. But we can do it from television satellites, too . . . far cheaper, far easier to construct and, through their numbers, far safer against enemy attack.

Second, it is true that from a manned space station we can launch nuclear missiles. Well — we can launch them from the ground, too, or from Polaris submarines; a lot more cheaply and just as accurately. The side-trip to

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a satellite does little to improve their striking force.

Third, maybe there *is* oil on Venus — but what would the freight charges be in bringing it to Earth?

We can't even fall back on the hope of living room for the expanding human race on other planets. Let's make believe the astronomers are wrong; let's assume Mars has plenty of air, Venus is cool enough to live on; let's assume, in fact, that every planet in the sky is a paradise.

Well, it isn't going to help our population problem a bit!

All of human history goes to show that the quest for "lebensraum" has never worked. A couple centuries ago there were a quarter-billion people in Europe, hungry for new land, many of them on the Maethusian brink of starvation. Their migrations populated the New World in quicktime — *but* — although the quarter-billion persons now in North America are their descendants, so are the *half*-billion persons still living in Europe! Their exported surplus populated a new continent — but those left behind doubled the population of the old!

So none of the answers hold much water, you see.

If we know one thing for sure about any sort of discovery, it is that we never know what we're getting until we've got it. Nearly all the explorations that spread civilized humanity around the globe were undertaken for the wrong reasons. The explorers sought one thing but found something else entirely.

But what they found was usually something far more valuable.

LET'S face the fact that, as science-fiction readers, most of us have a pretty good idea what we'd *like* to find in space, and it isn't oil or bomb-bases. Whether we advertise it or not, we have the sneaking hope that what we'll get out of space-exploration is company. We would surely like to know that we are not alone in the universe. We would like friends, of whatever chemistry or shape — an ostrich-shaped Stanley G. Weinbaum Tweel; we would settle for enemies — a catlike, incredibly intelligent A. E. Van Vogt Coeurl — if only to join the human race together in the struggle to repel them.

That's not a good bet — not for this year or next, anyway. Likely there are other intelligent races in the Galaxy — somewhere — but the planets that circle our own Sun, the only ones we have any real hope of visiting soon, are too hot or too cold, too dry or too deadly, to support any creatures very like ourselves. The chances

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are not zero, of course; but they are small.

Yet we have one solid fact, which is reason enough for any expenditure of money or time:

There is *something* out there.

What is it? We won't know until we get it.

It may be an alien spore with a violent antipathy toward Earthly microorganisms — a sort of *penicillium notatum* of the planets, to culture and to modify and to use to cure all our diseases.

It may indeed be life — or the remains of it — perhaps the graffiti of some vanished race on the cliffs of Mars, preserved by their dryness; perhaps with samples of their artifacts that may prove of inestimable value in cross-fertilizing and reshaping the course of terrestrial invention.

It may be raw materials of a kind we cannot now imagine, catalysts so potent that they are worth the expensive haul through space, chemicals created in the methane swirl of Jupiter or the sun-baked vacuum of the asteroids that cannot be duplicated on Earth.

It may be anything . . . or nothing. Nothing tangible, that is.

It may be merely knowledge.

And that, of course, is worth a million shiploads of rare Ganymedan ore. To see the distant, dwindling galaxies clear, without Earth's haze, in a great observatory on the Moon — to answer once and for all the questions of the origin of the universe — there is knowledge that, Earthbound, might always be beyond our reach. And we cannot even guess what such knowledge might do to all our lives.

FOR the overruling principle of progress is serendipity — that is, the art of discovering by accident what we haven't the wisdom to look for by design.

Pointless? Why, sure. All great researches were "pointless" — until they were carried along far enough to make the point appear! If Franklin had not played with kites and Galvani with frogs' legs we would not have the hundred electric motors in every home that do for us today so much back-breaking labor. Perhaps the only really wasted research is that which has its "point" too clearly in mind. Probably the design departments of the buggy manufacturers were hard at work discovering more efficient harnesses and better whips . . . but they couldn't very well invent the automobile!

The blueprints for interplanetary rockets are treasure maps. If we follow them faithfully we will find a great prize — but we won't know what it is until we have it.

We only know that it is there!

— THE EDITOR

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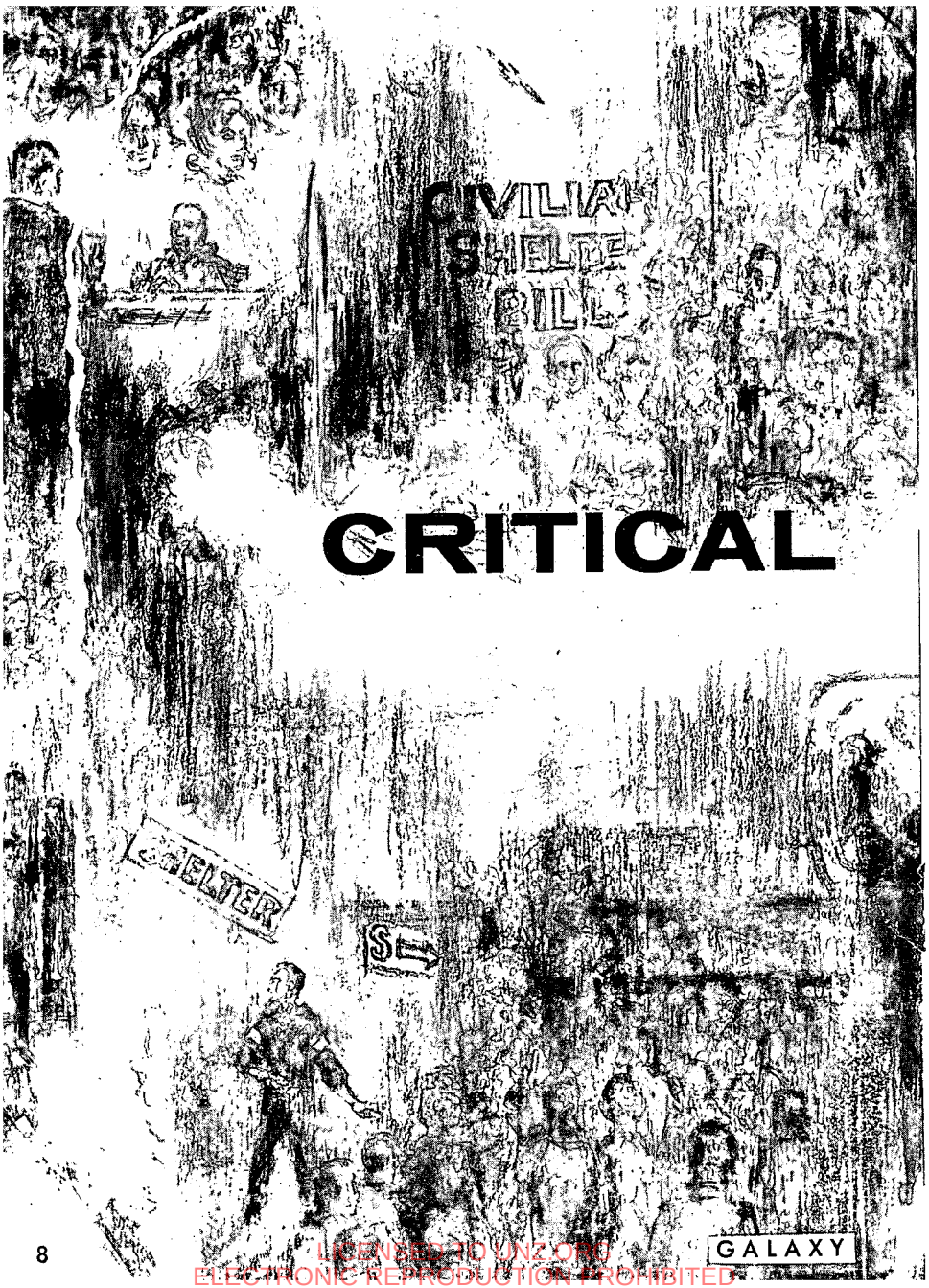

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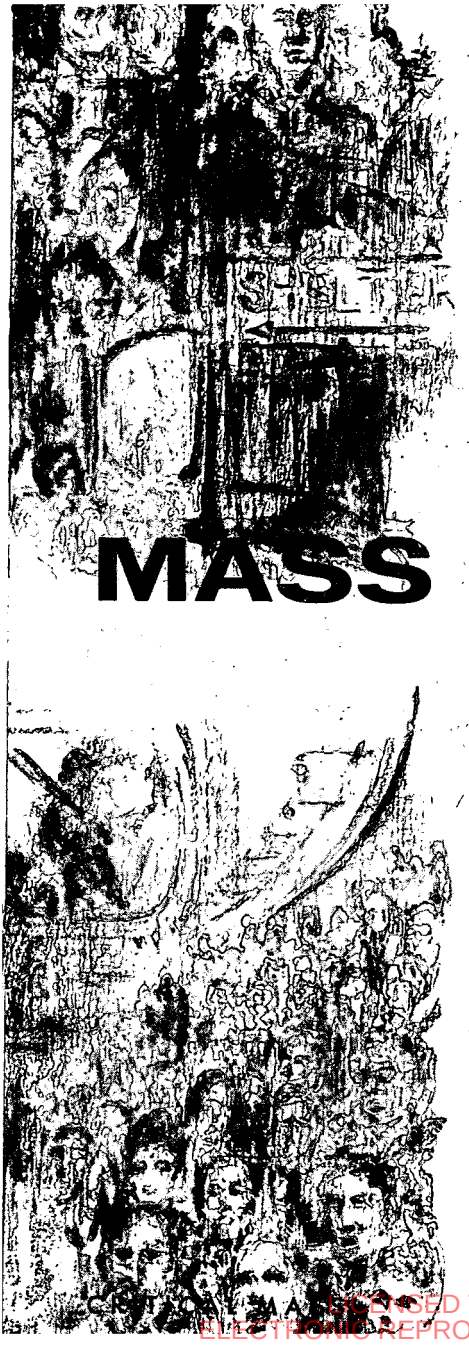

MASS

Everybody was talking about politics and baseball — and somebody, at last, was going to do something about them!

By FREDERIK POHL & C. M. KORNBLUTH

Illustrated by DICK FRANCIS

THE neutron was a plump young man named Walter Chase, though what he thought he was was a brand-new Engineering graduate, sitting mummified and content with the other 3,876 in Eastern's class of '98, waiting for his sheepskin.

The university glee club sang the ancient scholastic song *Gaudeamus Igitur* with mournful respect and creamy phrasing, for they and most of the gradu- faculty members, parents, r- tives and friends present in t- field house thought it was a hymn instead of the rowdy drinking song it was. It was a warm June day, conducive to reverence. Of Eastern's 3,877 graduating men and women only three had majored in classical languages. What those three would do for a living from July on was problematical.

CRITICAL ASSAULT
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But in June they had at least the pleasure of an internal chuckle over the many bowed heads.

Walter Chase's was bowed with the rest. He was of the Civil Engineering breed, and he had learned more about concrete in the four years just ended than you would think possible. Something called The Cement Research and Development Institute, whose vague but inspirational commercials were regularly on the TV screens, had located Walter as a promising high-school graduate. He was then considering the glamorous and expensive field of nuclear physics. A plausible C.R.D.I. field man had signed him up and set him straight. It took twelve years to make a nuclear physicist. Now, wasn't that a hell of a long time to wait for the good things of life? Now, here was something he ought to consider: Four years. In four years he could walk right into a job with automatic pay raises, protected seniority, stock participation *and* Blue Everything, paid by the company. Concrete was the big industry of tomorrow. The C.R.D.I. was deeply concerned over the lack of interest in concrete engineering, and it was prepared to do something about it: Full four-year scholarship, tuition, living costs and pocket money. Well?

Walter signed. He was a level-headed eighteen-year-old. He had been living with a pinch-penny aunt and uncle, his parents dead; the chance of the aunt and uncle financing twelve years of nuclear studies for him he estimated to lie midway between the incredible and the impossible.

Two solid hours dwindled past in addresses by the Chancellor, the Governor of the State and a couple of other politicos receiving honorary degrees. Walter Chase allowed the words to slip past him as though they were dreams, although many of them concerned his own specialty: shelters. You knew what politician talk was. He and the 3,876 others were coldly realistic enough to know that C.S.B. was a long way from being enacted into law, much less concrete-and-steel Civilian Shelters in fact. Otherwise why would the Institute have to keep begging for students to give scholarships to? He drowsed. Then, as if with an absent-minded start, the program ended.

Everybody flocked away onto the campus.

IN THE hubbub was all the talk of the time: "Nice weather, but, Kee-*rist!* those speeches!" "Who d'ya like in the All-Star?" "Nothing wrong with C.S.B. if it's *handled* right, but you take and throw a couple thousand warheads over the Pole and —" "My

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feet hurt." Chase heard without listening. He was in a hurry.

There was no one he wanted to meet, no special friend or family. The aunt and uncle were not present at his graduation. When it had become clear from their letters that they expected him to pay back what they had spent to care for him as soon as he began earning money he telephoned them. Collect. He suggested that they sue him for the money or, alternatively, take a flying jump for themselves. It effectively closed out a relationship he loathed.

Chase saw, approaching him across the crowded campus, another relationship it was time to close out. The relationship's name was Douglasina MacArthur Baggett, a brand-new graduate in journalism. She was pretty and she had in tow two older persons who Chase perceived to be her parents. "Walter," she bubbled, "I don't believe you were even *looking* for me! Meet Daddy and Mom."

Walter Chase allowed his hand to be shaken. Baggett *pere* was something in Health, Education and Welfare that had awakened Walter's interest at one time; but as Douglasina had let it slip that Daddy had been passed over for promotion three years running, Walter's interest had run out. The old fool now began babbling about how young fellows like Walter would, through the Civilian Shelters Bill, really give the country the top-dog Summit bargaining position that would pull old Zhdetchnikov's cork for him. The mother simpered: "So *you're* the young man! We've heard so much about you in Douglasina's letters. I tell you, why don't you come and spend the All-Star weekend with us in Chevy Chase?"

Walter asked blankly: "Why?"

"Why?" said Mrs. Baggett in a faint voice, after a perceptible pause. Walter smiled warmly.

"After all," he said, shrugging, "boy-girl college friendships. . . . She's a fine girl, Mrs. Baggett. Delighted to have met you, Mr. Baggett. Doug, maybe we'll run into each other again, eh?" He clapped her on the shoulder and slipped away.

Once screened from the sight of their faces, he sighed. In some ways he would miss her, he thought. Well. On to the future!

IN THE dormitory he snapped the locks on his luggage, already packed, carried them down to be stowed in the luggage compartment of the airport bus and then circulated gently through the halls. He had in four years at Eastern made eleven Good Contacts and thirty-six Possibles, and he had an hour or two before his plane to joke with, shake the

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hand of, or congratulate the nine of those on the list who shared his dorm. He fooled the fools and flattered the flatterable, but in his wake a few of his classmates grimly said: "That young son of a bitch is going to go far, unless he runs out of faces to step on."

Having attended to his nine he charitably spread some of his remaining time among the couple dozen Outside Chances he ran into. To a sincere, but confused, servo-mech specialist he said, man-to-man, "Well, Frankie, what's the big decision? Made up your mind about the job yet?"

The servo-mech man clutched him and told him his tale of woe. "God no, Walt. I don't know *which* way to turn. Missile R&D's offering me a commission right away, captain inside of two years. But who wants to be a soldier all his life? And there's nothing in private industry for inertial guidance, you know. Damn it, Walt, if only they let you resign from the service after a couple years!" Chase said something more or less comforting and moved on. He was careful not to chuckle until he was out of sight.

Poor Frankie! Got himself educated in what amounted to a military specialty — who else could afford servo-mechanisms? — and discovered he hated the Army.

Still, Chase meditated while nodding, smiling and handshaking, thirty years as an Engineering Officer might not be so bad. As it was one of the alternatives open to himself — that was what C.S.B. was all about — he allowed his mind to drift over the prospects. It wasn't like the bad old days of fighting. A flat and rigid policy of atomic retaliation had been U. S. military doctrine for fifty-three years, and backing it up was a large, well-trained U. S. military establishment of career men. And the regulations said *career*. The only way out short of thirty-year retirement was with a can tied to your tail and a taint to your name. He dismissed that thirty-year dead end with light contempt, as he had before.

The air-raid warning sirens began to howl their undulating hysteria.

Chase sighed and glanced at his watch. Not too bad. He should still be able to make his plane. Everyone around him was saying things like, "Ah, damn it!" or "Oh, dear," or *"Jeez!"* But they were all dutifully following the arrows and the "S" signs that dotted the campus.

Chase trailed along. He was kind of annoyed, but nothing could really spoil his day. The first shelter he came to was full up. The freshman raid warden stood at the door — Chase had been a raid warden himself three

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years before — chanting: "Basement filled to capacity, folks. Please proceed to Chemistry building. Don't block the exit, folks. Basement here filled —"

BECAUSE of the extra crowd caused by the graduation the Chemistry building basement was filled, too, but Chase got into the Administration building and sat down to wait. Like everybody else. Women fussed about their dresses — they always had, in every air raid drill he had taken part in, say, four a week for fifty-two weeks of each year for the nearly twenty years since he had been old enough to toddle alongside his late mother and father. Men grumbled about missing appointments. *They* always had. But for the most part the battery-fed air-raid lights gleamed equably on them all, the warden fussed with the air conditioner and the younger folk smooched in the corners.

It wasn't a bad shelter, Walter Chase thought. The Law School basement was a mess — too high a pH in the mortar mix, and the aggregate showing hygroscopic tendencies because of some clown not watching his rock crusher, so the walls were cracked and damp. Chemistry's had been poured in a freeze. Well, naturally it began to sinter and flake. This was better; trust the Chancellor to make sure his own nest was downy! Of course, in a *raid* none of them would be worth a hoot; but there weren't to be any real raids. Ever.

A jet plane's ripping path sounded overhead.

Evidently this was going to be a full-dress affair, at least regional in scope. They didn't throw simulated manned-bomber attacks for a purely local do. Walter frowned. It had suddenly occurred to him that with the air-transport flight lanes screwed up by military fighters on simulated missions everything within a thousand miles might be rerouted into stack patterns. What the devil would that do to his plane's departure time?

Then he smiled forebearingly. He was, in a way, pleased to be annoyed. It meant he was entering into the adult world of appointments and passages. They said that when a raid drill began to be a damn interruption instead of a welcome break from classes and a chance to smooch, then, brother, you were growing up. He guessed he was growing up.

"Goddam foolishness," growled the man who sat next to Chase on the bench, as though it were a personal attack. More jets shredded sound overhead and he glared at Chase. Walter inventoried his English shoes, seal ring and pale cigar and at once engaged him in conversation. The

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man was some graduate's father; they had got separated in the raid drill, and Pop was sore as a tramped bunion. The whole drill thing was damned childishness, didn't Walter see that? And *vindictive* damned childishness when they chose to throw one on graduation day of a major university. If only Crockhouse had been elected in '96 instead of Braden, with his packed ballots in Indiana and Puerto Rico!

HERE Walter Chase's interest cooled, because Pop sounded like a politician, revealed himself to be a Nationalist and thus was out of power. But there was no escaping the bench. What Pop objected bitterly to was the multiple levels of expense. Here the drill was knocking men out of production, but the damn Middle-Road Congress said they had to be paid anyhow. And if the Defense Department was making it a full-scale simulated raid, did Walter know what that meant? That meant that there went thirty or forty *Nineveh Ables* at a hundred and fifty thousand dollars apiece, and was that enough? No. Then they sent up four or five *Tyres* at ninety thousand apiece to knock down the *Ninevehs*. Did that make sense? He paused to glare at Walter Chase.

Walter said, "Well, that's the Cold War for you. Say, who d'you like in the All-Star —" He didn't get to finish the sentence.

"L.A." snapped Pop, without losing a beat. "Get the damn monkey-business over with, that's what I say. I'm a sneak-puncher and I'm proud of it. If we'd put our man in the White House instead of that psalm-singing Braden there wouldn't *be* any Moscow or Peking or Calcutta by now and we wouldn't be sitting here on our butts!"

Somebody clawed through from the bench in front; with horror, Chase recognized old man Baggett. But Douglasina's Daddy did not recognize him. Flushed with rage and politics he had eyes only for the sneak-punch advocate. "You're right it's monkey-business, fatmouth!" he snarled. "No thanks to you and your Crockhouse we aren't dead in this cellar instead of safe and secure! President Braden is a hundred per cent pledged to the C.S.B., God bless it, and —"

The rest of his sentence and Sneak-Punch's angry reply were drowned out by a further flight of jets overhead, and then the *wham-wham-wham* of interceptor missiles blowing simulated attackers out of the sky.

Somehow, heaven knew how, Walter Chase managed to sneak away, inching through the packed rows of benches. As soon as the All Clear siren toots began he

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was up and out, ignoring the freshman warden's puppylike yaps that they should remain in their seats until the front benches had been emptied —

Routine. It was all strictly routine.

Out on the campus, Chase headed for the airport in earnest, and was delighted to find that his flight was still on time. How lucky he was, he thought, with more pride than gratitude. "What are you, sir?" asked the robot baggage-checker, and he said, "Washington," with pleasure. He was on his way. He was headed for Washington, where Dr. Hines of The Cement Research and Development Institute would assign him to his job, doubtless the first rung of a dizzying climb to wealth and fame. He was a young man on his way. Or so he thought. He did not know that he was only a neutron ambling toward events.

II

ARTURO Denzer, in the same sense, was a nucleus. He knew no more about it than Walter Chase.

Denzer woke to the rays of a rising sun and the snarl of his wake-up clock. He took a vitamin capsule, an aspirin tablet, a thyroid injection; a mildly euphoric jolt of racemic amphetamine sulphate; caffeine via three cups of black coffee with sucaryl; and nicotine via a chain of non-filtering filter-tip cigarettes. He then left his apartment for the offices of *Nature's Way Magazine*, which he edited.

June's blossom was in the air, and so was the tingle of the All-Star Game Number One. The elevator operator said to him respectfully, "Who d'ya like in the All-Star game, Mr. Denzer?" Denzer turned the operator's conversation circuit off with a hand-wave. He didn't feel like talking to a robot at least until the aspirin began to work.

Absent-mindedly he waved a cab to him and climbed in. Only after it took off did he notice, to his dismay, that he had picked a Black-and-White fleet hack. They were salty and picturesque—and couldn't be turned off. The damned thing would probably call him "Mac."

"Who ya like inna All-Star, Mac?" the cab asked genially, and Denzer winced. Trapped, he drummed his fingers on the armrest and stared at the Jefferson Memorial in its sea of amusement rides and hot-dog stands. "Who ya like inna All-Star, Mac?" it asked again, genially and relentlessly. It would go on asking until he answered.

"Yanks," Denzer grunted. Next time he'd watch what he was doing and get a sleek, black Ripp-

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ington Livery with a respectful BBC accent.

"Them bums?" groaned the cab derisively. "Watcha think Craffany's up to?"

Craffany was the Yankee manager. Denzer knew that he had benched three of his star players over the last weekend—indeed, it was impossible to avoid knowing it. Denzer struck out wildly: "Saving them for the All-Star, I guess."

The cab grunted and said: "Maybe. My guess, Fliederwick's in a slump so Craffany benched him and pulled Hockins and Waller so it'd look like he was saving 'em for the All-Star. Ya notice Fliederwick was 0 for 11 in the first game with Navy?"

Denzer gritted his teeth and slumped down in the seat. After a moment the cab grunted and said: "Maybe. My guess is Fliederwick's in a slump so Craffany benched him and pulled. . . ." It went through it twice more before Denzer and his hangover could stand no more.

"I hate baseball," he said distinctly.

The cab said at once, "Well, it's a free country. Say, ya see Braden's speech on the C.S.B. last night?"

"I did."

"He really gave it to them, right? You got to watch those traitors. Course, like Crockhouse says, where we going to get the money?"

"Print it, I imagine," snarled Denzer.

"Figgers don't lie. We already got a gross national debt of $87,912.02 per person, you know that? Tack on the cost of the Civilian Shelters and whaddya got?"

Denzer's headache was becoming cataclysmic. He rubbed his temples feverishly.

"Figgers don't lie. We already got a gross national . . ."

Desperate situations require desperate measures. "I hate p-politics too," he said, stuttering a little. Normally he didn't like smutty talk.

The cab broke off and growled: "Watch ya language, Mac. This is a respectable fleet."

THE cab corkscrewed down to a landing in North Arlington-Alex and said, "Here y'are, Mac." Denzer paid it and stepped from the windy terrace of the Press House onto a crowded westbound corridor. He hoped in a way that the cab wouldn't turn him in to a gossip columnist. In another way he didn't care.

Around him buzzed the noise of the All-Star and the C.S.B. ". . . Craffany . . . $87,912.02, and at *least* $6,175.50 for Shelters . . . Foxy Framish and Little Joe Fliederwick . . . well, this *is* next

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year . . . nah, you sneak-punch 'em a couple thousand missiles over the Pole and . . . needs a year in the minors."

"Hello, Denzer," someone said. It was Maggie Frome, his assistant.

"Hello, Maggie," he said, and added automatically: "Who do you like in the All-Star game?"

In a low, ferocious voice she muttered: "You can take the All-Star game, tie it up in a b-b-b-brassiere and dump it in a Civilian Shelter. I am sick of the subject. *Both* subjects."

He flushed at her language and protested: "Really, Maggie!"

"Sorry," she grunted, sounding as though she didn't mean it. He contrasted her surly intransigence with his own reasoned remarks to the cab and tolerantly shook his head. Of course, he could have been taken the wrong way . . . He began to worry.

They stepped off together at the *Nature's Way* offices. Sales & Promotion was paralyzed. Instead of rows of talkers at rows of desks, phoning prospects out of city directories and high-pressuring them into subscriptions, the department was curdled into little knots of people cheerfully squabbling about the C.S.B. and the All-Stars. Denzer sighed and led the girl on into Transmission. The gang should have been tuning up the works, ready to shoot the next issue into seven million home facsimile receivers. Instead, the gang was talking All-Stars and C.S.B. It was the same in Typography, the same in Layout, the same in Editorial.

The door closed behind them, isolating their twin office from the babble. Blessed silence. "Maggie," he said, "I have a headache. Will you please work on the final paste-ups and cutting for me? There isn't anything that should give you any trouble."

"Okay, Denzer," she said, and retreated to her half of the office with the magazine dummy. Denzer felt a momentary pang of conscience. The issue was way overset and cutting it was a stinker of a job to pass on to Maggie Frome. Still, that was what you had assistants for, wasn't it?

HE studied her, covertly, as she bent over the dummy. She was a nice-looking girl, even if she was a hangover from the administration of President Danton and his Century of the Common Woman. Maggie's mother had been something of an integrationist leader in Sandusky, Ohio, and had flocked to Washington as one mote in Danton's crackpot horde, bringing her sub-teenage daughter Maggie. No doubt there had been a father, but Maggie never mentioned him. The mother had died in a car crash that looked

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like suicide after Danton lost all fifty-four states in his bid for re-election, but by then Maggie was a pert teen-ager who moved in with cousins in Arlington-Alex and she stayed on. Must just like Washington, Denzer thought. Not because of Female Integration, though. Danton's Century of the Common Woman had lasted just four years.

He winced a little as he remembered her coarseness of speech. She was round and brown-haired. You couldn't have everything.

Denzer leaned back and shut his eyes. The hubbub outside the office was just barely audible for a moment—some red-hot argument over the Gottshalk Committee's Shelter Report or Fliederwick's R.B.I. had swelled briefly to the shrieking stage—and then died away again. Heretically he wondered what the point was in getting excited over baseball or the building or non-building of air-raid shelters capable of housing every American all the time. One was as remote from reality as the other.

"Sorry, Denzer."

He sat up, banging his knee on his desk.

"Lousy staff work, I'm afraid. Here's the Aztec Cocawine piece and no lab verification on the test results." She was waving red-crayoned galleys in his face.

He looked at the scrawling red question-mark over the neat columns of type with distaste. *Nature's Way* promised its seven million subscribers that it would not sell them anything that would kill them; or, at least, that if it did kill them nobody would be able to hang it on the product directly. At substantial expense, they maintained a facility to prove this point. It was called The Nature's Way National Impartial Research Foundation. "So call the lab," he said.

"No good, Denzer. Front-office memo last month. Lab verifications must be *in* writing *with* notary's seal *on* hand before the issue goes to bed."

"Cripes," he protested, "that means somebody's got to go clear over to Lobby House." He did not meet her eye. Going over to Lobby House was a worthwhile break in the day's routine; the free snack-bar and free bar-bar the lobbies maintained was up to the best expense-account standards, and everyone enjoyed talking to the kooks in the lab. They were so odd.

"I'll go if you want, Denzer," she said, startling him into looking at her.

"But the issue—"

"Did most of it last night, Denzer. The Aztec story is all that's left."

"We'll both go," he said, rising. She had earned it; he needed a

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bromo and a shot of B-1 vitagunk in the Lobby House snack-bar; and since there would be two of them in the cab he had a ruse for cutting out the cab's talk about All-Stars and the C.S.B.

THE ruse was this: As soon as the cab took off he flung his arms around her and bore her back against the arm rest.

The cab chuckled and winked at them with its rear-view lens, as it was programmed to do. They discussed proofreading, the vacation sked and the choice of lead commercials for the next issue of *Nature's Way* in soft whispers into each other's ears all the way to Lobby House, while the cab winked and chuckled at them every fifteen seconds.

The kooks on the 93d floor were under the care of a sort of half-breed race of semi-kooks. These were science majors who had minored in journalism . . . or in marrying rich . . . and thus wandered into press agentry for scientific concerns. As liaison men between *Nature's Way* and the test-tube manipulators the semi-kooks occupied an uncertain middle ground. It sometimes made them belligerent. Denzer and the girl were let in to see the Director of Bennington's Division, a Dr. Bennington, and Denzer said: "We came for the Aztec Cocawine certification."

Dr. Bennington boomed: "Damn right! Coming right up! Say, who's gonna take it in the Game?" He thumped a button on his desk and in a moment a tall, stooped youth with a proudly beaked nose swept in and threw a document on his desk. "Thanks, Valendora. Lessee here, um, yeah. Says it's harmless to the nerves, ya-ta-ta, ya-ta-ta, all signed and stamped. Anything else today, Arturo? Gland extract, fake a heroin prescription, shot of Scotch?"

The beaked youth said loftily: "Our findings are set forth precisely, Dr. Bennington. The fluid contains an alkaloid which appreciably eroded the myelin sheaths of the autonomic nerve trunks."

Denzer blanched, but the semi-kook administrator agreed carelessly, "Right, that's what I said. It's that word 'appreciably.' Anything less than 'markedly,' we write it down as negative." He slipped it in an envelope that was already marked *Confidential Findings, Aztec Wine of Coca Corporation, Sponsor,* and sailed it across to Denzer. "Well, what about C.S.B., boy? They gonna get us dug in before it's too late?" He made them promise to stop in at the snack-bar or bar-bar before leaving the building, then offered them a drink out of his private stock. They refused, of course. That was just his way of saying

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good-by. It was the only way he knew to end a conversation.

WITH the certification in his pocket and the issue locked up, Denzer began to feel as though he might live, especially if he made it to the B-1 vitagunk dispenser in the snack-bar. He took Maggie Frome by the arm and was astonished to feel her shaking.

"Sorry, Denzer. I'm not crying, really. If somebody's going to sell crazy-making dope to the public, why *shouldn't* it be you and me? We're no better than anybody else, d-d-damn it!"

He said uncomfortably, "Maybe a drink's not such a bad idea. What do you say?"

"I'd love it," she sobbed. But then the sirens began to wail and they said, "Damn it," and "Oh, dear"—respectively, she did and he did—and they took their bearings by the signs and made for the shelters. Under Lobby House was nothing like enough space, so the air-raid shelter was the interior parts of the 10th through 85th floors, away from the flying glass of the curtain walls but not too near the elevator shafts. It was not a bad shelter, actually. It was proof against any bomb that the world had ever known, up to, say, early 1943.

There was plenty of room but not enough benches. Maggie and Denzer found a place on the floor where they could put their backs against a wall, and he allowed her to lean against his shoulder. She wasn't such a bad kid, he thought sympathetically, especially as the perfume in her hair was pleasant in his nostrils. There wasn't anything really *wrong* with Female Integration. Maggie wasn't a *nut*. Take baseball. Why, that was the Integrationist's major conquest, when women demanded and got equal representation on every major-league team in spite of the fact that they could not throw or run on competitive terms with men. They said that if all the teams had the same number of women it wouldn't matter. And it hadn't. And Integrationists were still crowing over the victory; and yet Maggie had refused to fall into the All-Star hysteria.

A roar like an outboard motor in the crown of your hat shook the building; A. A. "carpet" cannon laying a sheet of sudden death for missiles across the sky above them. Denzer relaxed. His headache was almost gone. He inclined his head to rest his cheek against Maggie's hair. Even with a hangover, it had been pleasant in the cab with his arms around her. He had been kind of looking forward to the return trip. If Denzer were indeed a nucleus, as in a way he was, he was beginning to feel a certain tugging of binding

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energy toward certain other nuclear particles.

As soon as the noise stopped, he thought he would speak to her.

The noise stopped. The voices of the men beside them bellowed into the sudden quiet: "—damned foolish idea of Therapeutic War was exploded ten years ago! And that's what we'd be if your idiot Crockhouse was in—exploded!"

And the man next to him: "At least Crockhouse wouldn't have us sitting in these fool imitation shelters! He'd *do* something."

"Whadya think *Braden* wants, for God's sake? Not these things. He's right on the record for C.S.B."

And then Maggie Frome, breathing fire, her head no longer resting on Denzer's shoulder: "What the hell is so great about C.S.B.? Shelters, no shelters, can't you get it through your head that if this keeps up we're *dead?* Dear God above, deliver me from fools, baseball players and p-p-politicians!"

Denzer tried to look as though he'd never met her; he was white-faced. Round, yes, sweet-smelling, yes, warm—but how could he ever get used to her dirty *talk?*

III

IF Denzer was a nucleus and Walter Chase a neutron, what can we call the President of the United States? He played a part. Without him nothing could happen. Perhaps what he did was to shape the life of the neutron before fission happened; in that sense one could call him a "moderator." This was an apt term for President Braden.

On this bright June morning in Washington—not Arlington-Alex or the bedroom municipalities in Maryland but the little old Federal District itself—the President of the United States held what was still called a "press" conference. He was late. The cathode-tube "newspapermen" grumbled a little as Secret Service men frisked them, but it was habit. They were used to being frisked, ever since that fanatic Alaskan nationalist publisher emptied a .32 at then-President Hutzmeyer in '83. And they were used to now-President Braden being late.

They rose when President Braden came in. As usual, he protested in his pleasant adopted border-South accent: "Please, ladies, please, gentlemen, don't bother —" So they sat down and smiled, and waited while Braden arranged some papers on his desk. He always did that. He never referred to them during the session, because he didn't have to, but every week there was the minute or two of silence in the room while the President, his rimless glasses gleaming studiously,

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pursed his lips over the documents in their red, blue and cream-colored folders.

He looked up and beamed.

Unobtrusive camera - eyes mounted flush with the walls of the conference room began to record. The elephantine Giuseppe von Bortoski, N.B.C. Washington bureau chief, incomparably senior correspondent, was privileged to lead off. He did: "Good morning, Mr. President. Do you have a statement for us today?"

"Nothing prepared, Joseph. It's been a quiet week, hasn't it?"

Von Bortoski said solemnly, "Not for Craffany," and everybody roared. Von Bortoski waited out his laugh and said: "But seriously, Mr. President, is there any comment on the radar picket situation?"

THE President paused, then looked faintly surprised. "I didn't know there was a 'situation,' Joseph. Our radar picket vessels off the Atlantic and Pacific coasts have been pulled in approximately two hundred miles. They all have the new microradar; they don't have to be so far out. This gives us a gratifying economy, since the closer we can pull them in the fewer ships we need to stick out there on picket duty. Is that what you wanted to know, Joseph?"

"No, Mr. President. I was referring to Representative Simpson's telecast yesterday. He alleged that the new radars haven't been adequately field-tested. Said the move was premature and, well, dangerous."

The President paused, then looked faintly angry. "I seem to recall that Illinois Simpson. A Democrat." Everybody nodded. "I am surprised that you are taking up our time, Joseph, with the wild charges that emanate with monotonous regularity from the Party of Treason." Everyone looked at the stout N.B.C. man with annoyance. The President turned toward a young lady correspondent, paused, and said, "Miss Bannerman, do you have a question?"

She did. What about the Civilian Shelters Bill?

The President paused, grinned and said, "I'm for it." He got a small laugh.

"I mean, Mr. President, what is its status now? As the leader of your Party, is it going to go through?"

The President paused longer than usual. Everyone in the room knew what he was waiting for, though it was a convention of the Press Conference to pretend he was answering off the cuff. At last the other end of the transprompter circuit got its signals cleared and the President said levelly: "As the leader of my Party, Miss

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Bannerman, I can say this thing is being hammered out. Slower than some of us would wish, true. But it will be done. It is the platform of my Party; on that platform I was elected in '98; and I have not the reputation of going back on my pledges." He inclined his head to an approving stir among the correspondents.

Von Bortoski made a mental calculation. He decided that the press conference had supplied enough matter for his upcoming newscast and to hell with the rest of them. "Thank you, Mr. President," he said. The other reporters swore under their breaths once more at the tyranny of the senior-correspondent rule, the President rose smiling and the armed guards stepped away from the doors.

C.S.B., C.S.B., the President mediated. Some day he would have to ask a question himself and find out just what this C.S.B. was all about. No doubt the R&I desk that fed him answers or speeches via the transprompter could tell him. He promised himself he would get around to it first thing, say, Monday. Or wait, wasn't Monday the first All-Star game?

A swift conveyor belt whisked him from the Annex to the Old White House and an escalator to the Oval Room. His personal secretary ventured to say: "You made good time, Governor. There's thirty-five minutes clear before the first appointment. How about a nap?"

President Braden snapped: "I see General Standish has been talking to you again, Murray. Tell that quack when I want doctoring I'll ask for it, and get me a drink."

The President, who liked to think he was a hard-riding, hard-drinking southern gentleman, although he had been a New Jersey accountant until he was thirty, sipped a glass of mineral water lightly tinted with whisky, decided he was refreshed and buzzed for the first appointment to start ahead of time.

The first appointment was with Senator Horton of Indiana. While he was coming in the transprompter whispered into the President's ear: "Call him David, not Dave. No wife. Ex-professor, for God's sake. Watch him."

The President rose, smiling, and gripped Horton's hand with warmth and the pressure of an old campaigner. "It's a great pleasure, David. How's Indiana shaping up for next year? Lose all your best seniors?"

Senator Horton had a shock of gray hair, a mournful face and a surprisingly springy, lean body for a fifty-year-old ex-professor. He said abruptly: "I don't follow the school's football schedule, Mr. President, I want something."

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"Unto the half of my kingdom," Braden said gaily, attempting to throw him off balance.

Horton gave him a meager smile. "I want you to bear down on the Civilian Shelters Bill. You are, after all, committed to it. It helped elect you. But twenty-two months have gone by and the bill is still in the Public Works Committee. I am on that committee, Mr. President, and it is my impression that I am the only member interested in seeing it enacted into law."

THE President said gravely, "That's a mighty serious charge, David. One I cannot act on without the fullest—"

"Excuse me for interrupting, Mr. President, but your time is valuable and there are some things you needn't bother explaining to me." Deeply affronted, the President stared at him. "Believe me when I say that I've come to you as a last resort. I get only bland evasions from Harkness. The Interior Department—"

Harkness was the committee chair and he had been Braden's personal campaign manager in the '96 run. The President rose and said, "Excuse *me*, Senator, but I don't permit people to speak about Jim Harkness like that in my presence."

Senator Horton distractedly ran his hands through his shock of hair. "I didn't mean to offend you. God knows I don't mean to offend anyone. Not even the Secretary of Interior, though if he thinks— No, I won't say that. All I want is to get the C.S.B. on the floor and get the construction work under way. Mr. President, how long can all this go on?"

The President remained standing, looked at his watch and said coolly, "All what, David?"

"We are in the fifty-third year of the Political War, Mr. President. Somehow, by a succession of last-minute, hairs-breadth accidents, we have escaped nuclear bombing. It can't go on forever! If the missiles came over the Pole today they'd annihilate this nation, and I don't give one juicy damn that China and Russia would be annihilated in the next forty minutes—"

He was trembling. The President's earphone whispered tinnily: "Hospitalized one year; nervous breakdown. The guard-ports have him covered with sleepy guns, sir." That was a relief; but what about this Horton? He was Doane's personal choice, chairman of the National Committee; had Doane put a raving maniac in the Senate? The President remembered, from those young, county-committeeman days when he remembered things clearly, that something like that had happened before. It had been during

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the Party of Treason's first years —a lunatic from the Northwest got elected to Congress and was mighty embarrassing until he committed suicide. The President, then a schoolboy, had chuckled with the rest of the nation over Congressman Zioncheck; but now he was not chuckling. It was *his* Administration and in the *Senate*. And a member of, God help him, *his* party.

The President did not look toward the guard-ports and the riflemen behind them. He said quietly, "David, I want you to calm down. No pledges have been forgotten and no pledges are going to be violated. I'll speak to Jim Harkness about the Shelter Bill today. That's a promise."

"Thank you," Horton said gratefully, and tried to smile. "I'll hold you to that, sir. Good day."

THE President buzzed, not for his next appointment but to talk to his secretary. "Murray, get me Senator Harkness on the phone." And to his chest microphone: "Transprompter desk? Get out of circuit. I'll buzz you." He heard the faint carrier tone in his ear die and the guard-ports click. For the first time since he stepped out of his shower that morning, the President was able to say a word that no one but himself could hear. He said it. It had only one syllable, but it improved his mood very much.

Harkness's voice was resonant and comforting. The President, sometimes nagged by a secret feeling that he was not very bright, knew damned well that he was brighter than Harkness.

He said: "Jim, I've got to wondering about this C.S.B. that you've got in Public Works. The day's young yet and I've had two questions about it. I know we campaigned on it—what is it, exactly?"

Harkness said comfortingly: "It's under control, Brad. That fellow Horton is trying to unbottle it, but we can keep him quiet. He doesn't know the ropes."

"Know that, Jim. I just had him in here, wailing and mad. What's it all about?"

"Why," said Senator Harkness, with something less of assurance in his voice, "it's about building shelters, Brad. Against nuclear attack." He pronounced it "nookyoular," in the approved White House fashion.

"Not quite my point, Jim. I mean—" the President searched for what it was he did mean—"I mean, I can find out the facts and so on, but what's got people so stirred up? Put it this way, Jim: What's your philosophy about the Civilian Shelters Bill?"

"Philosophy?" Harkness sounded vaguely scared. "Well, I would

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not know about philosophy, Brad. It's an issue, C.S.B. is, and we're very fortunate to have got it away from the Nationalists. C.S.B.'s very popular." The President sighed inaudibly and relaxed; Senator Harkness was clearly about to launch into one of his famous explanations of things that never needed to be explained. "You see, Brad, an issue is lifeblood to a party. Look over the field today. What's to argue about? Damn little. Everybody knows the Party of Treason is the Party of Treason. Everybody knows the Commies are crazy hoodlums, can't trust 'em. Everybody knows atomic retaliation is the only sound military policy. There, at one sweep, you knock domestic, foreign and military policy off the board and haven't anything left to play with except C.S.B." He paused for breath, but before the President could try to get him back on the track of the question he was rushing on: "It's a godsend, Brad! The Nationalists guessed wrong. They turned C.S.B. down in the name of economy. My opinion, they listened too much to the Defense Department people; naturally the generals didn't want to admit they can't intercept whatever the Commies throw at us, and naturally they want the money for interception instead of shelters. Well, that's all right, too, but the people say the last word. We Middle-Roaders guessed right. We slapped C.S.B. in our platform, and we won. What else is there to say about it? Now, we're not going to turn loose of an issue like that. Fools if we did. The strategy's to milk it along, get it on the floor just before we adjourn for campaign trips and if a Nationalist filibuster kills it, so much the better. That saves it for us for next year! You know, you never get credit in this game for what you've done. Only for what you're going to do. And, *hell*, Brad," he crowed, suddenly exultant as a child who found a dime in the street, "this thing is good for years! There has to be a big conference committee with the House on financing C.S.B., we haven't even set up liaison with Military Affairs. We've got four more years easy. How's that sound, Brad, eh? Ride right in to re-election in Twenty Oh Oh, the first President of the twenty-first century!"

"THANKS, Jim," said the President, "I knew I could get a straight answer out of you." It was the only way to stop him. Otherwise he might go clear on to the C.S.B. and its effect on the Integrationists, the C.S.B. and Labor, the C.S.B. and Colorado water diversion or the C.S.B. as viewed in the light of Craffany's

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benching of Little Joe Fliederwick.

And yet, pondered the President, he still didn't know even the question, much less the answer. *Why* was C.S.B. a good issue? The missiles hadn't hit in the past 53 years, why should a voting population march to the booths and elect its leaders because of their Shelter philosophy now?

Braden changed the subject. "What do you think of Horton, Jim?"

He could always count on Harkness being frank, at least. "Don't like him. A boat-rocker. You want my advice, Brad? You haven't asked for it, but it's get rid of him. Get the National Committee to put a little money in his district before the primaries."

"I see," said the President, thanked his former campaign manager and hung up.

He took a moment before buzzing Murray for the next appointment to sip his lightly tinted soda-water and close his eyes. Well, he'd wasted most of the thirty-five minutes he'd gained, and not even a nap to show for it. Maybe General Standish was right.

Once when Braden was younger, before he was governor of New Jersey, before he was state senator, when he still lived in the old Rumford house on the beach and commuted to Jersey City every day—once he had been a member of the National Guard, what he considered his obligation as a resigned West Pointer. And they had killed two of their obligatory four-hours-a-month one month watching a documentary film on nuclear attack. The arrows marched over the Pole and the picture dissolved to a flight of missiles. The warheads exploded high in air. Then the film went to stock shots, beautifully selected selected and paced: the experimental houses searing and burning on Yucca Flats, the etched shadows of killed men on the walls of Hiroshima, a forest fire, a desert, empty, and the wind lifting sand-devils. The narration had told how such-and-such kind of construction would be burned within so-many miles of Ground Zero. It remarked that forest fires would blaze on every mountain and mentioned matter-of-factly that they wouldn't go out until winter snow or spring rains, and of course then the ground would be bare and the topsoil would creep in mud down to the oceans. It estimated that then, even then, the year was no later than 1960, a full-scale attack would cost the world ninety per cent of its capacity to support life for at least a couple of centuries. Braden had never forgotten that movie.

He had never forgotten it, but he admitted that sometimes he

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had allowed it to slip out of his mind for a while. This latest while seemed to have lasted quite a few years. Only C.S.B. had brought it back in his recollection.

Because that was the question, the President thought, sipping his tinted soda-water. What was the use of C.S.B.? What was the use of any kind of shelters, be they deep as damn-all, if all you had to come out of them to was a burned-out Sahara?

IV

NOW that the simulated raid was over everybody was resuming their interrupted errands at once. Denzer was crammed in any-which-way with Maggie Frome wedged under an arm and that kook from the Institute—Venezuela?—gabbling in his ear about computer studies and myelin sheaths.

The elevator jollied them all along. "Don't forget tomorrow, folks. Be a lot of grandmothers buried tomorrow, eh?" It could not wink, but it giggled and, well, nudged them. Or at least it shook them. It was overloaded with the crowds from the shelter floors, and its compensators flagged, dropping it an inch below the sill of the lobby door, then lifting it. "Sorry, folks," it apologized. "Good night, all!"

Denzer grabbed Maggie's arm. The laboratory man called after him, but he only nodded and tugged the girl away through the crowds, which were mumbling to each other: "Foxy Framish . . . slip 'em a couple thousand nookyoular . . . caught off first . . . *oh, hell.*" The "oh, hells" became general as they reached the main lobby outside of the elevator bays.

Civilian Air Wardens formed chains across the exits. Like fish weirs they chuted the exiting civilians into lines and passed each line through a checkpoint.

"Denzer," groaned Maggie, "I'm cooked. I *never* wear my dosimeter badge with this old green dress."

The wardens were checking every person for his compulsory air-raid equipment. Denzer swore handily, then brightened. They did have their press cards; this *was* official business. Aztec Wine of Coca was a powerful name in industry, and didn't they have a right to take care of its affairs even if they overlooked a few formalities that nobody really took very seriously anyway? He said confidently: "Bet I get us out of it, Maggie. Watch this." And he led her forcefully to the nearest warden. "You, there. Important morale business; here's my card. I'm Denzer of *Nature's Way.* This's my assistant, Frome. I—"

Briskly the warden nodded. "Yes, *sir,* Mr. Denzer. Just come

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this way." He led them through the purse-seine of wardens, out of the building, into—why, Denzer saw, outraged, into a *police cab.*

"You fixed us fine, Denzer," gloomed Maggie at his side as they got in. He didn't have the spirit to listen to her.

THE roundup had bagged nearly fifty hardened criminals, like Denzer and Maggie, caught flagrantly naked of dosimeters and next-of-kin tags. They were a surly lot. Even the C.S.B. adherents among them belligerently protested their treatment; the sneak-punchers were incandescent about the whole thing. Office girls, executives, errand boys, even one hangdog A.R.P. guard himself; they were a motley assortment. The research man, Valendora, was among them, and so was the girl from the Institute's reception room. Valendora saw Denzer and slipped through the crowd toward him, holding a manila envelope as though it contained diphtheria vaccine and he was the first man to arrive at the scene of an epidemic. "Mr. Denzer," he said darkly, "I ask you to assist me. Eleven months of my time and twenty-two computer hours! And this is the only copy. *Statist. Analysis Trans.* expects this by tomorrow at the latest, and—"

Denzer hardly heard. *Statist. Analysis Trans.* was not the only periodical expecting something from one of the fish in this net. With an inner ear Denzer was listening to what his Front Office would say. He was, he saw clearly, about to miss a deadline. Seven million paid-up subscribers would be complaining to the Front Office when their copies were late, and Denzer knew all too well who Front Office would complain to about *that.* He whimpered faintly and reached for an amphetamine tablet, but an A.R.P. cop caught his arm. "Watch it, Mac," said the cop, not unkindly. "No getting rid of evidence there. You got to turn all that stuff in."

Denzer had never been arrested before. He was in a semi-daze while they were waiting to be booked. Ahead of him in line a minor squabble arose—Valendora seemed to be clashing with a plump young fellow in a collegiate crew-cut—but Denzer was paying little attention as he numbly emptied his pockets and put all his possessions on the desk to be locked away for him.

It was not until Maggie Frome repeated his name for the fifth time that he realized she was talking to him. She indicated a lanky, homely woman talking into an autonoter, seemingly on terms of amiable mutual contempt with the police.

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"Denzer," Maggie hissed urgently, "that girl over there. The reporter. Name's Sue-Mary Gribb, and I know her. Used to work with her on the *Herald*."

"That's nice. Say, Maggie," he moaned, "what the devil are we going to do about the Aztec Wine of Coca piece? The Front Office'll have our heads."

"What I'm trying to tell you, Denzer! Give her the lab report. She'll take it in for us!"

The sun rose in pink glory for Arturo Denzer.

Half blinded by the radiance of sudden, unexpected hope, he staggered back to the desk. Valendora and the plump youth were still at it, but he pushed past them, picked up the Nature's Way National Impartial Research Foundation envelope and clawed his way back to Maggie. "Pencil!" he snapped. She produced one and Denzer scribbled a note to Joe, in Production:

> Joe, we're in a jam. Fix this up for us somehow. Run it pp 34-35, push it through soonest, I've already got all okays so just jam it in. God bless you. If Front Office asks where I am I'm dead.

He thought of adding, "Will explain later," but he wasn't so very sure he could. He thought of kissing Sue-Mary Gribb; but she was another Female Integrationist, wearing slacks, carrying a corncob pipe; he only shook her hand briskly and watched her leave.

It was not until she was out the door that he realized why she had been there in the first place.

She was a reporter, gathering names. It was customary to run a list of A.R.P. violators in the newspapers. It was inevitable that someone who worked for *Nature's Way* would see his and Maggie's names on that list; and it was beyond hope that that someone would fail to show it to the Front Office.

With the help of Sue-Mary Gribb he might have made his deadline, but his troubles were not over. Front Office was solid C.S.B.

"Maggie," he said faintly, "when you left the *Herald*, did you part friends? I mean, do you think they might give us a job?"

THE next thing was that they had to wait for their hearing and, in the way of police courts, that took some time. Meanwhile they were all jammed together, noisy and fretful.

The bull-pen roared: "Quiet down, you mokes! You think this is a debating society?" Denzer sighed and changed position slightly so as not to disturb Maggie Frome, again placidly dozing on his shoulder. (This could become a habit, he thought.)

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Well, that was something else the Century of the Common Woman had accomplished. They had integrated the lockups, for better or for worse. Not that Maggie, asleep, was deriving the benefit she might from the integrated, but still very loud, yammering of the inmates of the bull-pen.

They weren't all A.R.P. violators. A sizeable knot in one corner were clearly common drunks, bellowing about the All-Star Game when they were not singing raucously. They were the chief targets of the bull-pen's repeated thunderings for quiet, as its volumetric ears registered an excessive noise level. They must wear out those tapes in a week, Denzer thought.

A diffident finger touched his arm. "Mr. Denzer?" It was the research fellow from the Institute.

Softly, to refrain from disturbing Maggie, he said: "Hello, Venezuela. Make yourself comfortable."

"Valendora, Mr. Denzer."

"Sorry," said Denzer absently, inhaling Maggie's hair.

"I ask you, Mr. Denzer," Valendora said, choosing his words with as much care as though he were taping a question for his computers, "is it proper that I should be arrested for being twenty-six feet away from where I would not be arrested?"

Denzer stared at him. "Come again?" Maggie stirred restlessly on his shoulder.

"I was two floors below the Foundation, Mr. Denzer, no more," said the research man. "We are not required to wear dosimeters in the Institute itself. Two floors is twenty-six feet."

DENZER sighed. This was not a time when he had patience for nuts. The girl on his shoulder stirred and he said, "Good morning, Maggie." Valendora swept on:

"Naturally, Mr. Denzer, it did not occur to me to go back for my dosimeter. My probable error was more than twenty-four hours minus, though zero plus, and it might have been the real attack. I was carrying a most important document and I could not endanger it."

Maggie looked at him with faint curiosity and then twisted around to look at Denzer's face. "The deadline, Denzer?" she muttered. He crossed his fingers and shrugged.

"Mr. Denzer," cried Valendora, "you are a man of influence. *Statist. Analysis Trans.* is waiting for this study—and besides," he added wonderingly, "I suppose if the attack is to come tomorrow someone should do something about it. Can you not secure justice for me in this matter?"

Rocked by the sudden vision of

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himself as a man of influence, Denzer hardly heard the rest of what the research man was saying. Maggie Frome pushed herself away from him and stared thoughtfully at Valendora.

"We're all in the same boat, friend," she said kindly.

Valendora scowled at the floor. "But what's this about an attack?"

With bitter sarcasm Valendora said, "Nothing at all, Miss Frome. Merely what I have spent eleven months of my time on. *And* twenty-two computer hours."

"I'm impressed, friend. You said something about an attack?"

Valendora said, "You would not understand single-event prediction, Miss Frome. It is a statistical assessment of probabilities. Oh, nothing in itself that has not previously been studied, true; but it is in the establishing of quantitative values for subjective data that I have, I do know, made a contribution." He shrugged moodily. "And by tomorrow? The event, you see. If I have not published before the event it is only a mathematical statement. The test of a theory is the predictions that can be made from it; I have made my prediction. During the All-Star Game, you see—"

"There you are!" cried a new voice.

It was the plump youth who had been quarreling with Valendora at the booking desk. He was still angry. "Baseball," he snapped, "that's all I hear. Can't I make anyone understand that I am a special investigator on Senator Horton's *personal* staff? The senator is waitng to interview me right now! And this man has stolen my thesis!" He put a hand out and briskly pumped Denzer's. "Walter Chase, sir. M.A., C.E., and all the rest of that nonsense," he twinkled, for he had made a quick estimate of Denzer's well-cut clothes and hangdog look and pigeonholed him at once as *second-string executive, subject to flattery.*

"Denzer. *Nature's Way,*" he mumbled, trying to let go of the hand, but Chase hung on.

"I'M in cement, Mr. Denzer," he said. "Did a bit of research—my dissertation, actually—just received another degree—and Senator Horton is most taken by it. Most taken, Mr. Denzer. Unfortunately I've just the one copy, as it happens and it's, well, rather important that it not be lost. It concerns cement, as it affects our shelter program—and, after all, what *is* a shelter but cement? Eh? Probably should've been classified at the start, but—" He shrugged with the faint amused distaste of the man of science for the bureaucrat. "Anyway, I must have it; the senator

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must see it with his own eyes before he'll give me the j— before making final arrangements. And this man has stolen it."

"Stolen!" screamed Valendora. "Man! It is your fault, man! I was only—"

"Be careful!" commanded Chase furiously. "Don't blame *me!* I was merely—"

Denzer felt a tug on his arm. Maggie Frome winked and led him away, near the group of singing drunks. They sat down again. "Quieter here!" she shouted in his ear. "Put your shoulder back, Denzer! I want to go back to sleep!"

"All right!" he yelled, and helped her settle her head against him; but in a moment she raised it again.

"Denzer!" she asked over the singing of the group, "did you hear what your friend from the Institute was saying? Something about an attack? I had the funny idea he meant missile attack—a real one, I mean."

"No," he shouted back, "it was only baseball! All-Star Game, you know."

And he hardly heard the raucous bellowing of the drunks for the next half hour, inhaling the fragrance of her hair.

They were released at last, Denzer making bail; the bail corresponded to the amount of their fines for A.R.P. violation, and small print at the bottom of their summons pointed out that they could forfeit it if they chose, thus paying their fines, simply by failing to appear at the magistrate's trial. They got out just in time to get the bulldog edition of *Nature's Way* from a sidewalk scriber.

They looked at once on the spread, pages 34 and 35, expecting anything, even blank pages.

Tragically, the pages were not blank at all.

PAGES 34 and 35 had nothing to do with Aztec Wine of Coca. It was a straight news story, headlined:

U. S. MISSILE VULNERABILITY TOTAL IN ALL-STAR GAME, SAYS GOVERNMENT STATISTICS EXPERT

From there it got worse. Maggie screamed faintly over Denzer's shoulder as she read parts of it aloud: " 'The obsessive preoccupation of the American public with baseball stems from a bread-and-circuses analogy with ancient Rome. Now, as then, it may lead to our destruction.' Denzer! Does this maniac want us to get lynched?"

"Read on," moaned Denzer, already several laps ahead of her. Neatly boxed on the second page was a digested, sexed-up version

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of something Denzer recognized faintly as the study of cement in the shelter program Chase had mentioned. What the *Nature's Way* semantic-digester had made of it was:

SHELTERS DEATH TRAPS

Study of the approved construction codes of all American shelter projects indicates that they will not withstand even large chemical explosives.

"I think," sobbed Arturo Denzer, "that I'll cut my throat."

"Not here, Mac," snapped the news-scribing machine. "Move on, will you? *Hey!* Late! Whaddya read?"

Shaking, the couple moved on. "Denzer," Maggie gasped, "where do you think Joe got this stuff?"

"Why, from us, Maggie." Denzer tried to swallow, but his throat was dry. "Didn't you hear Chase before? That was the mix-up at the desk; we must have got his papers, and I suppose what's his-name's, Venezuela's, and bundled them off to Joe. Nice job of rush typography, though," he added absently, staring into space. "Say, Maggie. What Venezuela was talking about. You think there's any truth to it?"

"To what, Denzer?"

"What it says here. Optimum time for the Other Side to strike —during the All-Star Game, it says. You think—?"

Maggie shook her head. "I don't think, Denzer," she said, and they walked on for a moment.

They heard their names called, turned, and were overtaken rapidly by Valendora and the cement engineer. "You!" cried Chase. "You have my thesis!"

"And you have my study!" cried Valendora.

"Not I but humanity," said Denzer sadly, holding out the damp faxed edition of *Nature's Way*.

Valendora, after one white-faced oath in Spanish, took it calmly. He glanced up at the sky for a second, then shrugged. "Someone will not like this. I should estimate," he said thoughtfully, "that within five minutes we will all be back in the *calabozo*."

But he was wrong.

It was actually less than three.

V

IT was the third inning, and Craffany had just benched Little Joe Fliederwick. In spite of the sudden ban on air travel the stadium was full. Every television screen in the country followed Little Joe's trudging walk to the dugout.

In the White House President Braden, shoes off, sipping a can of beer, ignored the insistent buzzing in his ear as long as he could. He wanted to watch the game. "—

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and the crowd is *roaring,*" roared the announcer, "just a-*boiling,* folks! What's Craffany up to? What will he do next? Man, don't we have one going here *today?* Folks, was that the all-important turning point in today's all-im— in today's record-breaking All-Star Game, folks? Well, we'll see. In sixty seconds we'll return to the field, but meanwhile—"

The President allowed his attention to slip away from the commercial and took another pull at his beer. Baseball, now. That was something he could get his teeth into. He'd been a fan since the age of five. All his life. Even during the Century of the Common Woman, when that madman Danton had listened to the Female Lobby and put girls on every second base in the nation. But it had never been this good. This Fliederwick, now, he was *good.*

Diverted, he glanced at the screen. The camera was on Little Joe again, standing at the steps to the dugout, looking up. So were his teammates; and the announcer was saying: "Looks like some more of those air-to-air missile-busters, folks. A huge flight of them. *Way* up. Well, it's good to know our country's defense is being looked after and, say, speaking of defense, what do you suppose Craffany's going to do now that—"

The buzzing returned. The President sighed and spoke to his invisible microphones. "What? Oh. Well, damn it . . . all right."

With a resentful heart he put down the beer can and snapped off the television set. He debated putting his shoes back on. He decided against it, and pulled his chair close to the desk to hide his socks.

The door opened and Senator Horton came in.

"Mr. President," cried Horton, "I want to thank you. There's no doubt your prompt action has saved your country, sir. I imagine you've been filled in on the, ah, incident."

Well, he had been, the President thought, but by Senator Harkness, and maybe the time had come when Jim Harkness' view of world affairs needed a little broadening. "Suppose you tell me about it," he said.

Horton looked faintly perplexed, but said promptly: "It was basically an accident. Two men, working independently, came up with reports, strictly unofficial, but important. One was a graduate student's thesis on shelter construction; happens the boy was looking for a job, the Cement Research & Development Institute recommended him to me, he was on his way to see me when the thing happened. That's how I became involved in it. The other

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fellow's a lab worker, at least as far as earning a living's concerned, but he's a mathematician something-or-other and was working out a problem with his lab's computers. The problem: If the Reds are going to sneak-punch us, when will they do it? The answer: today. While we're all off base, with the All-Star Game. In the old days they'd maybe pick a presidential election to put one over, just like Hitler used to pick the long weekends. Now all they need is a couple of hours when everybody's looking the other way, you see. All-Star Game's a natural."

The President said mildly, "I can see that without using a computer, Senator."

"Certainly, sir. But this boy proved it. Like to meet him, by the way? I've got the lot of them, right outside."

IN for a penny, in for a pound, thought the President, motioning them in. There were three men and a girl, rather young, rather excited. Senator Horton rattled off introductions. The President gathered the other two had been involved in the security leak that had occurred on the reports.

"But I've talked to them," cried Senator Horton, "and I can't believe there's a grain of malice in all of them. And what they say, Mr. President, requires immediate action."

"I was under the impression I'd taken immediate action," said the President. "You asked me to ground all civilian air traffic so the missile-watchers could have a clear field; I did. You asked me to put all our defense aircraft airborne; I did. You asked for a Condition Red defense posture and you got it, all but the official announcement."

"Yes, Mr. President. The immediate danger may have been averted, yes. But what about the future?"

"I see," said the President, and paused for a second. Oddly, there was no voice from the prompter in his ear to suggest his next words. He frowned.

"I see," he said again, louder. The tiny voice in his ear said at last:

"Well, sir, uh—" It cleared its throat. "Sir, there seems to be some confusion here. Perhaps you could ask the Senator to continue to brief you."

"Well—" said the President.

"David," whispered the prompter.

"—David, let's get our thinking organized. Why don't you continue to fill me in?"

"Gladly, sir! As you know, I'm Shelters all the way. Always have been. But what this young man here says has shaken me to the

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core. Mr. Venezuela says—" Valendora grinned sullenly at the rug— "that at this very moment we would be in atoms if it hadn't been for his timely publication of the statistical breakdown of our vulnerability. He's even a little sore about it, Mr. President."

"Sore?"

The senator grinned. "We spoiled his prediction," he explained. "Of course, we saved our own lives . . . The Other Side has computers too; they must have assessed our national preoccupation with baseball. Beyond doubt they intended to strike. Only the commotion his article caused—not only in our own country but, through their embassies, on the Other Side—plus of course your immediate reaction when I telephoned you asking for a Red Alert, kept the missiles from coming down today, sir. I'm certain of it. And this other young fellow, Mr. Chase—" Walter Chase bowed his head modestly—"brought out a lot of data in his term paper, or whatever it was. Seemed like nonsense, sir, so we checked it. Everything he said is not only fact but old stuff; it's been published hundreds of times. Not a word of new material in it." Chase glared. "That's why we've never built deep shelters. They simply won't stand up against massive attack—and cannot be made to stand up. It's too late for shelters. In building them we're falling into the oldest strategic trap of human warfare: We're fighting yesterday's war today."

President Braden experienced a sinking feeling when the earprompter said only, and doubtfully, "Ask him to go on, sir."

"Go on, si— Go on, David."

"Why," said the senator, astonished, "that's all there is, Mr. President. The rest is up to you."

PRESIDENT Braden remembered vaguely, as a youth, stories about the administration of President—who was it? Truman, or somebody around then. They said Truman had a sign on his desk that read: *The buck stops here.*

His own desk, the President noticed for the first time, was mirror-smooth. It held no such sign. Apart from the framed picture of his late wife there was nothing.

Yet the principle still held, remorselessly, no matter how long he had been able to postpone its application. He was the last man in the chain. There was no one to whom the President could pass the buck. If it was time for the nation to pick itself up, turn itself around and head off in a new direction, he was the only one who could order it to march.

He thought about the alternatives. Say these fellows were

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right. Say the shelters couldn't keep the nation going in the event of all-out attack. Say the present alert, so incredibly costly in money and men, could not be maintained around the clock for any length of time, which it surely could not. Say the sneak-punchers were right . . .

But no, thought the President somberly, that avenue had been explored and the end was disaster. You could never get *all* the opposing missile bases, not while some were under the sea and some were touring the highways of the Siberian tundra on trucks and some were orbital and some were airborne. And it only took a handful of survivors to kill you.

So what was left?

Here and now, everybody was waiting for him to speak—even the little voice in his ear.

The President pushed his chair back and put his feet up on the desk. "You know," he said, wiggling his toes in their Argyle socks, "I once went to school too. True," he said, not apologizing, "it was West Point. That's a good school too, you know. I remember writing a term paper in one of the sociology courses . . . or was it history? No matter. I still recall what I said in that paper. I said wasn't it astonishing that things always got worse before they got better. Take monarchy, I said. It built up and up, grew more complex, more useless, more removed from government, in any real sense, until we come to things like England's Wars of the Roses and France's Sun King and the Czar and the Mikado—until most of the business of the government was in the person of the king, instead of the other way around. Then—bang! No more monarchy."

"Mr. President," whispered the voice in his ear, "you have an appointment with the Mongolian Legate."

"Oh, shut up, you," said the President amiably, shocking his prompter and confusing his guests. "Sorry, not you," he apologized. "My, uh, secretary. Tells me that the Chinese representatives want to talk about our 'unprecedented and unpeace-loving acts'—more likely, to see what they can find out." He picked the plug out of his ear and dropped it in a desk drawer. "They'll wait. Now, take slavery," he went on. "It too became more institutionalized—and ritualized—until the horse was riding the man; until the South here was existing on slaves, it was even existing *for* slaves. The biggest single item of wealth in the thirteen Confederate states was slaves. The biggest single line of business, other than agriculture, was slavery, dealing and breeding. Things get big and formal, you see, just before they

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pop and blow away. Well, I wrote all this up. I turned it in, real proud, expecting, I don't know, maybe an honorary LL.D. At least a compliment, certainly . . . It came back and the instructor had scrawled one word across the top of it: *Toynbee.* So I read up on Toynbee's books. After, of course, I got over being oppressed at the instructor's injustice to me. He was right. Toynbee described the whole thing long before I did.

"But, you know, I didn't know that at the time. I thought it up myself, as if Toynbee had never lived," said the President with some pride. He beamed at them.

Senator Horton was standing with open mouth. He glanced quickly at the others in the room, but they had nothing but puzzlemen to return to him. He said, "Mr. President, I don't understand. You mean—"

"Mean? I mean what's happened to us," said the President testily. "We've had our obsessive period. Now we move on to something else. And, Senator, Congress is going to have to help move; and, I'm warning you, you're going to help me move *it.*"

WHEN they left the White House it was late afternoon. The lilacs that bordered the walk were in full, fragrant bloom. Denzer inhaled deeply and squeezed the hand of Maggie Frome.

Passing the sentry box at the end of the drive, they heard a voice from a portable radio inside. It was screaming:

"It's going . . . it's *going* . . . it's GONE, folks! Craffany has pulled one out of the fire again! And that wraps it up for him, as Hockins sends one *way* out over centerfield and into the stands . . ." The guard looked out, rosily beaming, and waved them on. He would have waved them on if they had worn beards and carried ticking bombs; he was a Craffany rooter from way back, and now in an ecstasy of delight.

"Craffany did it, then," said Walter Chase sagely. "I *thought* when he benched Hockins and moved Little Joe Fliederwick to —"

"Oh, shut up, Chase," said Denzer. "Maggie, I'm buying drinks. You want to come along, Venezuela?"

"I think not, Mr. Denzer," said the research man. "I'm late now. *Statist. Analysis Trans.* is expecting me."

"Chase?" Politeness forced that one out of him. But Chase shook his head.

"I just remembered an old friend here in town," said Chase. He had had time for some quick thinking. If the nation was going over to a non-shelter philosophy —if cave-dwelling was at an end and a dynamic new program was

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going to start—maybe a cement degree wasn't going to be the passport to security and fame he had imagined. Walter Chase had always had a keen eye for the handwriting on the wall. "A young lady friend," he winked. "Name of Douglasina Baggett. Perhaps you've heard of her father; he's quite an important man in H. E. & W."

The neutron, properly paced, had struck the nucleus; and the spreading chain was propagating rapidly through their world. What was it going to be from now on? They did not know; does a fissioned atom know what elements it will change into? It *must* change; and so it changes. "I guess we did something, eh?" said Denzer. "But . . . I don't know. If it hadn't been us, I expect it would have been someone else. Something had to give." For it doesn't matter which nucleus fissions first. Once the mass is critical the chain reaction begins; it is as simple as that.

"Let's get that drink, Denzer," said Maggie Frome.

They flagged a cab, and all the way out to Arlington-Alex it chuckled at them as they kissed. The cab spared them its canned thoughts, and that was as they wished it. But that was not why they were in each other's arms.

—FREDERIK POHL
AND C. M. KORNBLUTH

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They were a charming family and everybody loved them to death — especially Amanda!

SHATTER THE WALL

By SYDNEY VAN SCYOC

Illustrated by WEST

THERE he stood, Bass McDowall, life-size on the Wall. She made herself look at the hateful broad-shouldered image with the deliberately penetrating black eyes. She made herself watch his boy-image bend over Kippie's slender girl-image, made herself listen to his mellow voice gasp, "Kippie, sweetie-bug."

Savagely she thrust upward on the ebony lever. Bass McDowall, Wall idol, and Kippie lurched and disappeared. Lights glowed from fixtures recessed into the ceiling, illuminating the long, windowless Wall room.

Kathryn, whose hair was a snug, dark Kippie-cap, leaped from the Wall seat. "Don't turn it off now! Couldn't you even tell, Mother? He's going to kiss her! Turn it back on this minute!"

Amanda stationed herself before the lever, shaking her head. "Not until I've spoken to you," she said. "Kathryn, I don't think you realize yet what it means, but you're the youngest person, the very youngest, living in this city."

"Quit calling me that! Everyone has to call me Kippie." She cocked her dark head, Kippie-like. The red mark caused by the constant prodding of her index finger against her cheek glared. "Bass loves Kippie. He called her sweetie-bug."

"I refuse to call you Kippie." She folded her arms. "I don't

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want to discuss your name again, Kathryn."

"It will be Kippie." She squirmed into a Kippie-like position. "Soon as I'm twenty-one, I'll change it. You wait!"

"Perhaps you will, Kathryn. But I'll never call you Kippie."

"Oh, quit being silly and turn it on. He might kiss her again." She focused her blue eyes upon the Wall. "Turn it on."

"Kathryn, I want to talk to you, and I intend to do so without Bass McDowall staring over my shoulder." She sat down beside her daughter. "Now, Kathryn, you're nineteen years old, and you're certainly attractive by any—"

"I don't have dimples like Kippie does." Remembering, she poked her finger back into her cheek.

"I'm not talking about Kippie." She stared at the finger sunk into her daughter's cheek, wondering how many times she had explained that it wouldn't cause a dimple. "I want you to get married, Kathryn."

"I'VE told you a million times, I won't. You're always after me!" she wailed. "Bass won't ever marry anyone, not even Kippie, and she's got dimples. Bass says—"

"Bass McDowall is not a real person. He's only an actor."

"He's the realest thing in the world. But he won't marry me, so you'd better forget it." She stepped to turn the Wall on again.

Instantly the ash tray was in Amanda's hand, the massive glass tray Dell had given her. She hurled it at the Wall, which shattered with a brittle explosive splintering.

Kathryn jumped back, wailing. "I hate you!" Frantically she manipulated the lever and twisted the ebony dials. "Bass, come back. Bass!"

Amanda patted the Wall seat. "Sit down, Kathryn."

Finally the girl sat down, sullenly rubbing her eyes with her fists.

"Kathryn, have you noticed that we never see infants on the Wall? We never see small children, either, because, Kathryn, you're the youngest person in this city. The week after you were born, the city hospital's obstetrical ward closed permanently."

Kathryn sobbed convulsively. "Who needs babies? I want Bass!"

"The human race needs babies! Kathryn, you sit so complacently in front of your Wall and pretend there isn't a world! There won't be unless you wake up."

"Don't be silly!"

"I'm not. Kathryn, you may be the youngest person in the

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world, for all I know. Forty or fifty years from now this planet will be cluttered with blank Walls. There'll be no one to watch them."

"Well, there's nothing I can do about it. I'm not different, like you."

"Kathryn, marry. Have children. Persuade your friends at the office—"

She laughed shrilly, rocking back against the Wall seat. "Friends! They hate me, every one of them, and I hate them. Even if Bass did marry me, they'd only take him away."

Amanda clutched her fists. "I don't want you to marry Bass. You must find some nice boy your own age."

"Oh, Mother! You want me to marry some stupid, ugly boy! You can't make me!"

"Kathryn, he needn't be dull. There are hundreds of boys, each interesting in—"

HEARING a sound, she looked up to see Dell, thin and red-headed, standing in the doorway staring at the shattered Wall.

Kathryn jumped up. "Mother broke it. She threw that big green ash tray and broke it all to pieces."

Dell looked questioningly at Amanda. "Honey, why'd you do that?"

"She's jealous of Bass!"

"Now isn't Bass pretty young for you, honey?" He stooped to remove the ash tray from inside the shattered Wall. "Now, how can I watch Alice this evening? She promised me a special dance in that red dress she was showing me last night."

"Showing you?" She sprang up. "She showed it to every man in the country, Dell."

He frowned. "Well, I'll call Replacements. They'll have a new Wall in before Alice comes."

"And I'll smash it too. I'll smash every replacement you can buy!"

"Now, Amanda." He regarded her mildly. "You're not jealous of Alice! Honey, if you'd watch Lester, you wouldn't care about Alice and me."

She took the intact ash tray from him. "I'm not jealous of Alice, and I haven't been for twenty years. But Dell, do you realize Kathryn was the last child born in this city?"

The girl's voice was harsh. "She wants me to marry some stupid, ugly boy. And I won't do it! I love Bass."

Dell's pale eyes were rebuking. "Amanda, how can you expect Kippie to do that?"

She stepped back. "Kippie?" she said harshly. "Dell, that girl standing there is Kathryn, our daughter—not Kippie."

"Don't let such little things

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upset you, baby. I'll go call Replacements, and we'll all sit down together when Alice and Lester come." He turned.

She seized his arm. "I will *not* watch Lester," she said. "I will not sit and stare at that big, gray-haired ape and pretend I'm in love with him."

Dell frowned. "You don't really think he looks like an ape, do you, baby? I was—well, thinking of changing my name to Lester."

Kathryn leaped to hug him. "Oh Daddy! It'll be so wonderful. Lester, Lester, Lester! If we had an Alice and a Bass, we'd be almost like a real family."

She stared at them. "I'd hoped to put you in a favorable frame of mind for this, Kathryn," she said. "You'll remember that three years ago the Watsons, next door, had Wall failure and couldn't get service until morning. I invited them to watch our Wall."

Dell nodded. "Haven't seen them since, now that I think of it."

"You haven't. But tonight Mrs. Watson is lending me her son Gerald. He's coming at seven."

"Mother!" Kathryn cried, releasing Dell. "How terrible! Gerald! What a stupid name. I love Bass, and you can't take him away from me."

"That wasn't very nice, was it, Amanda?"

"It's done," she said. "He's twenty-two, and I want you to talk to him, Kathryn."

Kathryn scowled.

"And I've arranged for you to go over to their house to watch Alice, if you must, Dell."

Dell forgot he was indignant. "Well, Kippie, maybe this one time you can do as your mother wants," he said. "Surely Bass won't mind if you miss him this once. He's an understanding sort of chap."

Kathryn thought for a moment, scowling. "All right, I'll do it—if you'll call me Kippie, Mother."

Amanda studied her. "All right — Kippie," she said finally.

AFTER agreeing reluctantly not to call Replacements until Gerald had come and gone, Kippie wriggled into a Kippie-like position and poked her finger deep into her cheek again.

Gerald, who arrived promptly at seven, wore his light hair combed into a Bass-like curl low over his forehead. He speared Amanda with a penetrating stare, making her shiver as she led him to the Wall room.

Kippie sulked angrily on the Wall seat.

Amanda introduced them, and they looked at each other, their glances revealing no interest.

"You're trying to comb your hair like Bass," Kippie accused.

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Gerald grinned. "Sure thing, sweetie-bug."

"Then you should dye it. It's the wrong color. Bass doesn't have blond hair. And why is your name still Gerald? Don't you ever want to be Bass?"

Gerald looked slapped. "I tried. Honest, I really did. But you know there's a limit, and the man at the bureau said there were too many Basses already." His face brightened. "But my parents call me Bass all the time."

"Oh."

Gerald shuffled his feet. Gingerly he sat down.

"Uh, did you see them last night?" he asked.

"Of course. I always see them, except when my mother does something stupid."

Quickly Amanda excused herself and went to the Food Center. She leaned against the counter, trying to overhear their conversation.

They spoke in broken murmurs momentarily, then were silent.

Kippie cleared her throat irritably.

"Uh, nice weather," Gerald said loudly.

"I haven't been out."

They were silent again. She tried to make her fingers stop picking at a spot on the counter surface.

Suddenly Kippie emerged hurriedly from the Wall room, looking put upon.

"Where are you going?" Amanda demanded.

"He can't talk like Bass, even when he tries. And his hair is the wrong color, and he has blue eyes."

"But Kathryn—Kippie, those are external characteristics! You can't judge a person by the color of his hair and his eyes. You must get acquainted with him."

"I won't do it. I don't love him. I love Bass!" She cocked her head, Kippie-like. "And besides, he loves the real Kippie. And I'll never have dimples. I'm going to call Replacements."

Amanda seized her arm. "Call them, and I'll break the new Wall too. I'll break every Wall you bring into this house. Don't you understand what's happening?"

"Quit being stupid."

"I'll break every Wall you have installed."

"And every time you do it, I'll order a new one." She broke loose and ran to the communicator.

SHE had to do something. She wondered briefly, Why must I do something? It could only be the survival instinct driving her. Perhaps, she thought wryly, she was the only person who still possessed that particular instinct.

She could never break every

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Wall in the world, no matter how she tried.

She picked up the magazine Kippie had thrown down that morning. Running her finger over the cover, she poked it through Bass's penetrating eye. She poked Kippie in the nose.

She flipped the magazine open and went through it, mutilating the pages. "There's a hole in your head, Lester . . .

"One less eye for you, Alice . . .

"Poor little Kippie, I tore your chin. Right through the dimple. Will Bass love you now, Kippie?

"Goodby, Bass." She crumpled him into a ball and threw him at the sink.

On the next page was a print of a restaurant. She read the caption.

"For two hours each evening, while filmed sequences are shown to the home audience, the stars retire to Antola's for sandwiches, drinks and shop talk."

She tried to stop her thoughts as they went to the sleeping alcove and the old gun in the top shelf of the built-ins. Dell hadn't bothered to unload it since he'd cleaned it last.

She dropped the magazine and went to the top shelf of the built-ins. The gun was there.

IT didn't take her long to drive downtown. There were no other cars on the streets, and the current to the traffic lights had been cut three years before. She passed only a prowling squad car, and the two police stared at her curiously.

She parked a block from Antola's. Leaving the car, she slung her purse, heavy with the gun, over her arm. Briskly she walked down the deserted street.

Antola, standing behind the bar, was tall, thin and red-headed. He stared at her incredulously, wiping his hands repeatedly on his long white apron.

She went past the bar to a small table.

Antola continued to wipe his hands, as if they would not quite come dry. "You want something?"

"Yes, bring me a bacon and tomato sandwich and milk."

"Don't have bacon and tomato. Kippie, she likes tuna. Bass hamburg. Lester and Alice, they both take grilled cheese. Which do you want?"

"Bring me tuna and milk."

"Kippie, she says milk don't go with tuna. Makes a big blob inside."

"I said tuna and milk."

"Okay, if you want a blob inside. Kippie don't." He ambled away.

Not knowing how long she might have to wait, she nibbled at her sandwich.

Soon she heard voices approaching the restaurant. She

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snaked her hand toward the purse, opened it and clutched the gun.

Alice entered first, her hair a disciplined halo of red-gold, her eyes vivid green. She was quarreling with Bass, who cheerfully ignored her, his penetrating eyes staring greedily at the bottles behind the bar.

Small, precocious-seeming Kippie followed, her dark hair ruffled by the wind. She stared lovingly up into Lester's eyes.

When the door had closed behind them, Amanda stood and raised the gun. They hadn't noticed her, they'd been too anxious to mount the bar stools. Ducks in a shooting gallery, she thought.

Alice was sitting nearer her, combing her hair with her fingers. Holding the gun out before her with both hands, Amanda aimed it at Alice's hair. She pulled the trigger.

At the sound, they all tried to duck, except Alice, who folded quietly to the floor. Amanda aimed again, and this time Lester crumpled.

Ducks in a shooting gallery, she though. See if you can make that big drake, Bass, fall off his stool.

Bass fell. Kippie screamed, banishing her dimples, and fell beside him.

Antola had disappeared. It didn't matter. She returned the gun to her purse. She hadn't decided what to do next. Suddenly feeling hungry, she sat down to finish her sandwich.

WHEN she was through, she rose, slung her purse over her arm again and stepped past the four bodies. They hardly seemed real, lying in their separate pools of crimson.

The two policemen came in, staring at her again.

"Catch her!" Antola cried from beneath the bar. "She done it! She killed them all! Poor little Kippie!"

The florid policeman locked his hand about her wrist, while the other cried for Antola to come out.

Her wrists were quickly handcuffed, and the florid policeman escorted her to the police car. He shoved her into the back seat.

She didn't move, didn't think. The world seemed frozen.

It didn't begin to thaw again until the second squad car and the ambulances arrived. They came slowly, without sirens or flashing lights. She wondered why they came so casually.

The florid policeman returned to the car. "All dead," he said. "Even poor little Kippie."

Silently they drove the deserted streets. She looked out at the buildings, knowing the people inside them soon would be

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shocked by the news of the stars' deaths.

When they reached police headquarters, she had to run to keep up with the florid policeman as he pulled her up the stone steps. They walked endless corridors, gray and gloomy, until they emerged into a small, dim room.

A man in a tweed coat, who smoked a pipe and spoke suavely, stepped from the group of men in street clothes.

"Did you kill them?" he asked. "Don't be afraid to tell me. I only want to know if you killed them."

She nodded. "Certainly I did it."

He took her purse from the uniformed policeman and removed the gun. "But why, tell me. Were you jealous of Alice, perhaps?" His pipe jumped as he smiled confidentially.

"Certainly not!" she said. "I did it to save the human race from suicide."

The men smiled, amused.

"Lock her up until we decide," the man in tweed instructed the florid policeman. He gave her the purse, minus the gun.

A bony, disapproving matron led her to a cell and locked her into it. Amanda requested pencil and paper.

The matron frowned but brought them. Placing the paper against her purse, she began composing a statement to the press, making clear her motives.

The filmed sequence still played on the small Wall opposite her cell. She glanced up occasionally at the faces and smiled.

She had almost completed the statement when the filmed sequence ended. The small, oily emcee appeared upon the Wall. "Ladies and gentlemen," he said.

She waited expectantly for the death announcement.

"Our stars!" He flung out his arms dramatically.

And the four stars pranced, smiling, across the Wall. Kippie, Bass, Alice and Lester.

Amanda jumped to the bars. It was not a film.

"Matron!" she screamed. "Matron!" Frantically she stared at the four actors whom she had murdered and who were alive and smiling.

"Matron!"

The bony matron unlocked the cell. "Come with me."

"Matron, I killed them. I shot them!"

"Come with me."

The matron led her into a small, dim room.

The tweedy man smiled confidentially around his pipe. "Are you ready to go home, Mrs. Davis?"

"But I murdered them. You

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have to keep me here!" She tried to catch the lapels of his suit.

He smiled again. "Who did you murder, Mrs. Davis?"

"All of them. You know I did it. I shot them, and they were all dead. He said so—the policeman." Her hands shook.

"Look over there." He pointed to a small Wall. "They're alive and performing, aren't they, Mrs. Davis?"

She looked at the Wall. Alice and Lester were planting a small rose bush together.

"You see, occasionally women do suffer from delusions like yours," he said. "But now that you've recovered, I'll drive you home. After a quiet night you'll forget all this."

"They aren't delusions," she insisted. "I did it, with my husband's gun. I waited until they closed the door, then I aimed—I know I did it."

"Yes, certainly," he said, leading her to the door. "Now come along home, Mrs. Davis."

She continued to protest, but he pulled her through the corridors and down the steps to a waiting car. He nudged her into the front seat.

THEY passed darkened buildings. She saw the neon sign atop the *Herald* offices ahead. If no one knew she'd killed them, no one would awaken. No one would live again. The world would end after all.

She opened the door and jumped from the moving car. Stumbling, she ran toward the *Herald* offices.

She stumbled into the building and began seeking through its bright corridors. Stopping to stare at each office door, she finally found the one labeled "Editorial. Mr. Gray." She pushed into the office.

The little man behind the desk wore horn-rim glasses and smoked a pipe that was a copy of Lester's. He smiled paternally. "Yes, dear?"

"I killed them! They're all dead!"

Realizing excitement did nothing to make her words more believable, she forced herself to be calm.

Editor Gray wore his gray hair combed straight back, Lester-like. He stood, putting one hand into his trouser pocket, as Lester always did.

"Who did you kill?" he asked quietly. "Calm down, dear. Tell me who you killed."

"Lester and all the rest. You have to print it. I shot them—they're dead. Print it in your paper."

He crossed the room to his Wall. Bass and Kippie were rolling pie dough together, one on either end of the rolling pin.

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"I'm afraid you're imagining these things, my dear." He sucked his pipe, looking lovingly at Kippie. "I could love that child, but of course Alice would be jealous."

She backed away from him into the arms of the tweedy man, who had come into the office.

"I'm sorry to bother you, sir," he said. "This poor woman is suffering from delusions. I was driving her home when she escaped me."

"That's all right," Editor Gray said mildly. "Perhaps she needs professional help. Have you considered that, my dear?"

But Amanda was staring at Bass. She stared at his penetrating eyes, his broad shoulders, at the curl of hair combed low over his forehead. The curl was swirled left, not right.

The tweedy man took her arm, guided her from the building and nudged her into the car.

Do they curl a dead actor's hair differently, she wondered. She had killed them. Why weren't they dead?

WHEN they reached her house, it was completely dark. Either Dell and Kippie had gone to bed or the Wall had been replaced and was playing.

"I'm sorry I had to bring you away so abruptly,' the tweedy man said. "We can't afford to have the press print unfavorable reports about the force, you understand." He fingered his pipe. "Now, Mrs. Davis, get a good night's sleep. Tomorrow you'll realize it was all a bad dream. You wouldn't kill the stars."

Woodenly she walked up the front walk. Hearing Bass's mellow voice from the Wall room, she knew Kippie and Dell were up.

She entered the room. Kippie sat curled on the Wall seat.

Amanda stared at the handsome face on the Wall. Bass McDowall, Wall idol. Why wasn't he dead?

His curl was still curled wrong. She looked more closely at his face as he leaned toward Kippie, gasping, "Sweetie-bug."

There was a small scar beneath his left eye. The tiniest, most insignificant scar, but it had never been there before.

"Poor Bass, he looks so tired," the Kippie on the Wall seat said. "See how his face looks thinner when he's tired? I wonder if she notices it."

Dell said, "After all, Bass has worked hard today, Kippie."

Bass's face was indeed thinner. Thinner face, small scar that hadn't been there before, curl that curled wrong—what did it mean?

Suddenly she realized the image on the Wall wasn't Bass. She corrected herself. He was a

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different Bass. He wasn't the one she had shot, but his almost identical double.

She stared at her daughter, who looked more like Kippie each time she assumed another of her characteristics or poses. There were hundreds of young people wanting to be Bass or Kippie, hundreds of young men combing their hair the way Bass did, smiling as he did, learning to use their eyes as he did. And if the time should come when a new Bass was needed, there he was, hundreds of him.

She frowned. Undoubtedly they had several doubles waiting conveniently nearby to perform if something should happen to one of the stars.

SHE felt a choking in her throat. It would be as impossible to kill all the Basses and Kippies as it would be to break every Wall in the world. There was no way to get rid of them, no way to make people listen to what was happening. No way to prevent humanity from watching itself to extinction.

As they grew older, she guessed, the actors would grow older too. Gradually Bass would be thirty, then thirty-five, and Lester and the others would age too. But no one would notice; everyone would be aging at the same rate.

But some day someone would notice. Some day all the Lesters would die, and there would be no more Lester to smile at Alice and look thoughtful. And people would look around and see that her daughter, Kathryn, was the youngest person in the world.

But by then even Kathryn would be past the child-bearing age.

Stunned, she sat down beside Dell. He squeezed her hand. She looked up at the Wall, into Bass's penetrating dark eyes. His eyes were so deep, she thought. His hands were strong, and his face was intelligent. How could she ever have hated him?

"Where've you been, baby?" Dell asked.

She shook her head irritably. "Be quiet," she said. "Can't you see he's going to kiss her?"

Perhaps she should change her name to Alice. Then they'd have Kippie, Alice and Lester. All they needed was a Bass, and they would be almost like a real family.

It would be so easy to forget this way, looking deep into Bass's dark eyes.

— SYDNEY VAN SCYOC

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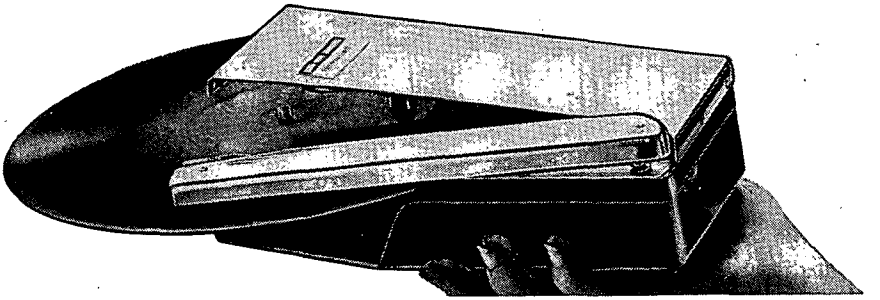

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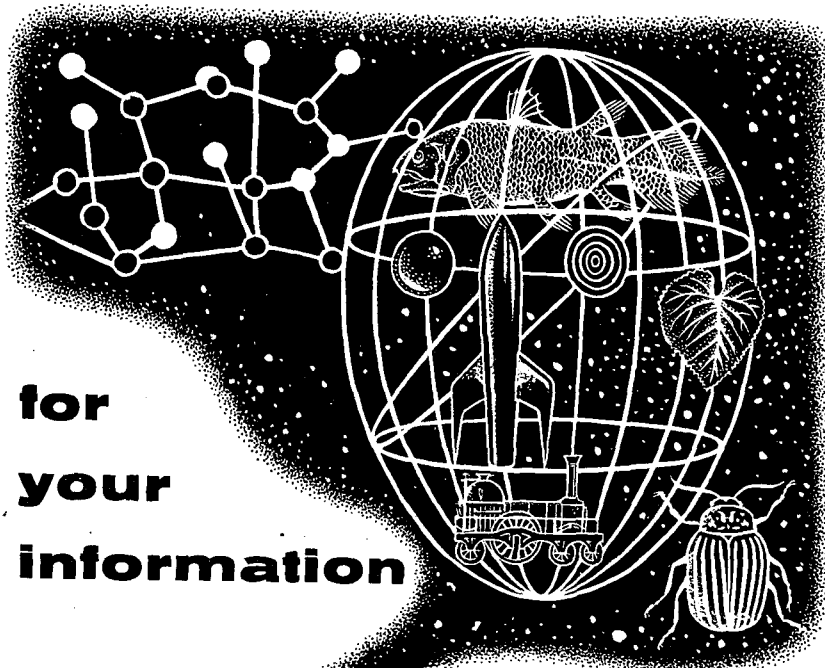

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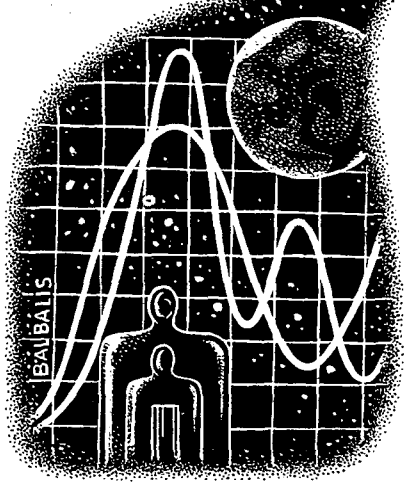

BY WILLY LEY

EARTH'S EXTRA SATELLITES

WE all know, of course, that the year 1961 will go down in history as the year during which a manned spacecraft orbited the Earth for the first time. But it is also the year during which earth's additional natural satellites were finally discovered.

That our Earth might have another satellite in addition to the moon was suspected for more than a century. Now Dr. K. Kordylewski of Kraków Observatory could

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announce that he had discovered it. But rarely have expectation and reality differed so much from each other. The expectation had been that it would be a small but massive moonlet, and that it would be much nearer the Earth than the moon. The reality is the opposite of both these expectations—but let's tell the story from the beginning.

The originator of the idea of a second moon of Earth was a French astronomer, Monsieur Petit of Marseilles, in about 1850. He invented the second moon for the purpose of explaining certain small discrepancies in the motion of our big moon. Our big moon did not always seem to be in the point of its orbit where, according to calculation, it should be at that moment. The simple fact of life was that the methods of calculation then used were not quite good enough for the purpose; but at that time it was just as logical to assume that an unknown body in orbit around the earth was the cause of the discrepancies.

To the best of my knowledge no astronomical observatory ever instituted a full-fledged search program. But single amateur astronomers, and groups of them, did try to find it. The reason for the continued interest was that a French novelist by the name of Jules Verne had read an abstract of Petit's work and had incorporated the second moon of Earth into one of his earliest novels. Since *From the Earth to the Moon* became a world success, with translations into literally dozens of languages and steady reprints in all of them, the idea was kept alive.

It is always easy to be wise after the event but it can now be stated that nobody seems to have sat back and thought the problem through in all its aspects. A moonlet large enough to influence the motions of our big moon would have to be quite large. But a moon with a diameter even of, say, just 10 per cent of the diameter of the big moon would not have stayed undiscovered, especially not since it was assumed to be in a much smaller orbit, only a few thousand miles out. Everybody who has seen *Echo I* in orbit (about 100 feet in diameter and about 1,000 miles out) will understand this. Even if the second moon appeared only as a luminous dot to the naked eye it would have been noticed because of its fast movement. Moreover it would have risen in the West and set in the East. It might have been a tiny naked-eye object, but it would have been a conspicuous one.

This, of course, still left the possibility that the moonlet was too small to be a naked-eye object, something only a foot or so in diameter.

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Nobody was much interested in this possibility. A moonlet or even several of that size would not influence the orbital motion of our big moon; moreover that orbital motion had been fully explained in the meantime without need for additional bodies in orbit. Interest in moonlets too small to be seen emerged for the first time when artificial satellites came under consideration. *Then* it became important to know about their existence. The situation was somewhat similar to the one which produced the famous first catalogue of what we now call gaseous nebulae and extragalactic spiral nebulae.

Monsieur Charles Messier in Paris—he lived from 1730 to 1817—had decided that he would become famous if he discovered a comet. Now the first suspicious sign of a comet, before it has grown its tail, is a fuzzy appearance. Messier found to his dismay that there were objects in the sky which always looked fuzzy. One could not tell what they were but they were decidedly not comets. In order to avoid disappointments Messier went ahead and made himself a list of those permanently indistinct-looking bodies. After he had settled that he did go ahead comet-hunting.

A reference book will tell you that Charles Messier discovered 21 comets . . . but what he is famous for is the first catalogue of the nebulae which he compiled.

BY 1955, when the first artificial satellites were decidedly in the near future, it was necessary to catalogue the orbits (if any) of small natural satellites (if any) of about the same order of magnitude as the coming artificial bodies. Professor Clyde Tombaugh went ahead, under Army contract, to find small natural moons. Soon after he had started his search several newspapers printed a story to the effect that he had found at least one 400 miles out and another one 600 miles out. It simply was not true (moreover the story was printed before he had even searched these areas) and the overall outcome of Tombaugh's search was negative.

This seemed to end the quest started by Petit once and for all. The earth did not have more than one moon, of any size and at any reasonable distance.

Only one faint possibility was left.

There are a number of asteroids in the same orbit as the planet Jupiter. They are usually called the "Trojans" because all the asteroids in Jupiter's orbit bear the names of heroes of the Trojan war, straight out of the *Iliad*. The theoretical groundwork had been laid back in 1772 when

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Joseph Louis Lagrange had published a mathematical essay on "Three Bodies." He had been looking for a possibility of a stable system formed by three bodies. Two bodies was easy: if one was much smaller than the other, the smaller one would orbit the bigger one. If they were of nearly equal size they would both go around their common center of gravity. But what would three bodies do? Could they form a stable system like two bodies?

In general the answer was "no," but Lagrange found two exceptions to that "no." One of the two exceptions was when the three bodies formed an equilateral triangle. If they formed such a triangle and revolved around one of the three (obviously the biggest one) they would maintain their relative positions. If the orbit was rather elliptical the equilateral triangle would change its size during the course of completing one orbit. But it would not change its shape. Many years later, in February, 1908, an asteroid (No. 588, Achilles) was discovered which demonstrated that this actually happened in nature. Achilles was in Jupiter's orbit; it formed an equilateral triangle with Jupiter and the sun and kept steadily ahead of Jupiter. Later in the same year asteroid 617—Patroclus was discovered. It also had an equilateral position with Jupiter and the sun, but trailed Jupiter in its orbit. Now a dozen are known. Half of them lead Jupiter, the other half trail.

When I wrote my book *Conquest of Space* in 1949 I had to explain this to my readers. At that time I began to wonder whether the "Trojans" of Jupiter's orbit are really the only case and I wrote on page 150: "We don't know whether there are 'Trojans' forming an 'Earth-Equilateral,' a 'Venus Equilateral' or even a 'Moon Equilateral.' So far nobody has looked for them, though it might be an interesting job for a gifted amateur with a reasonably large telescope."

Well, I was right in one point only. The additional moons of earth are in a "Moon Equilateral" position. But they were discovered by a professional—and a telescope is no help!

DR. K. Kodylewski reported in Spring 1961 that he had found two faint cloud-like objects in position L_5, which is the trailing equilateral in the moon's orbit. At a later date, in letters written to the Smithsonian Astrophysical Observatory at Cambridge, Massachusetts, and to the journal *Sky and Telescope* he told the story of his discovery.

In 1951 he began to examine both position L_4 and position L_5 with a telescope, hoping that fair-

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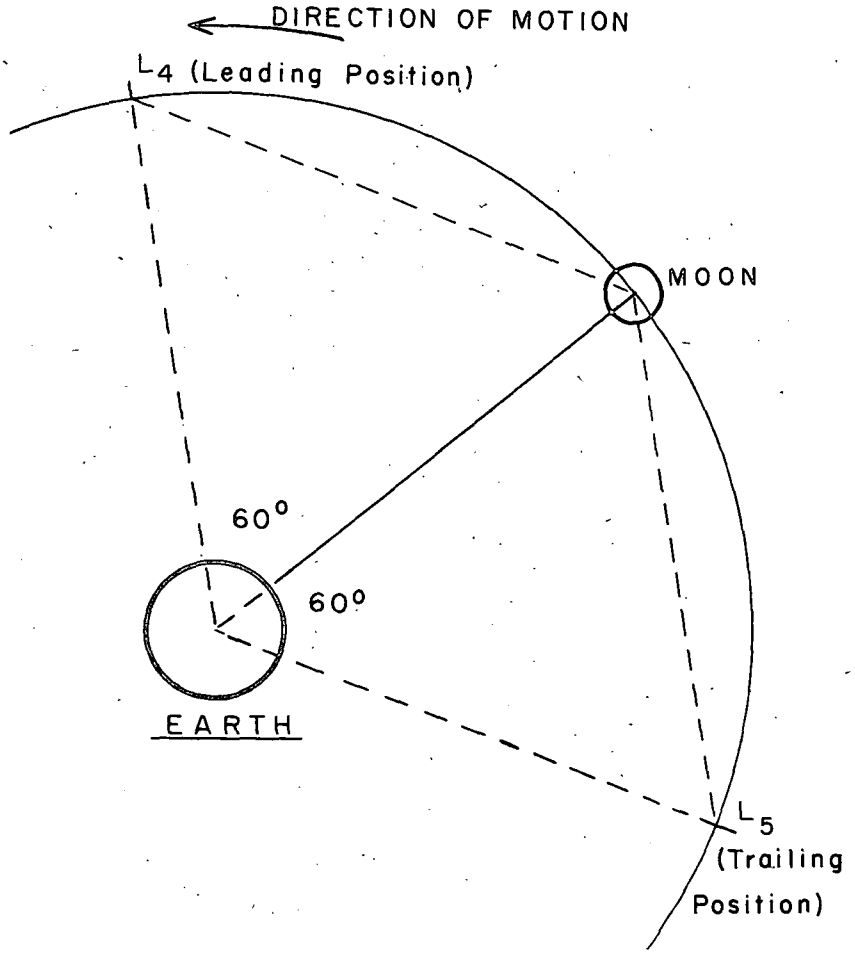
ly large meteoroids might be orbiting the Earth in the moon's orbit. The search was unsuccessful and Dr. Kordylewski was probably ready to give up. But in 1956 his compatriot and colleague professor J. Witkowski suggested that there might be meteoroids in these positions, but too small even to show up in a good telescope. However, if you had a whole cloud of dust particles, or not much larger than dust, they might be visible, though *not* with a tele-



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scope. Such a cloud might be luminous enough to be seen with the naked eye on a dark night. Using a telescope would "magnify it out of existence" . . . the same case as the famous *Gegenschein* I discussed a few issues back.

Dr. Kordylewski was willing to try. He went to high mountain stations in Czechoslovakia. Just a dark night with clear air was not enough, however. A few other things were needed. The moon—which would be near the full phase itself when the so far purely hypothetical dust clouds would be brightest—would throw so much light into the night sky they would become invisible. Hence it would do no good to look at positions L_4 and L_5 if the moon was above the horizon too. One of these positions had to be above the horizon; the moon itself had to be below the horizon. Moreover, if you checked, say, position L_5, this position had to be in a part of the sky where the Milky Way would not interfere.

In October, 1956, Dr. Kordylewski saw, for the first time, a fairly luminous patch in one of the two positions.

It was not small, subtending an angle of about 2 degrees, but it was very faint, only about half as bright as the notoriously difficult *Gegenschein*. But even the *Gegenschein*, faint as it is, can be photographed if conditions are good, if you know precisely what you are up against and if you also have some luck. Dr. Kordylewski decided to try his luck with a camera. But first he checked with the Sonneberg Observatory in East Germany. At Sonneberg they have been taking thousands of pictures every year in the study of variable stars. Maybe they had caught one of the dustclouds without paying any attention to it. The latter sounded so likely; the smudging of the plate would be quite minor, besides they were after their variable stars. It turned out, however, that there was not a single plate of either the L_4 or the L_5 position taken at a time when the moon wasn't in the sky to obscure things too!

In March and April of this year Dr. Kordylewski did succeed in photographing two clouds near the L_5 point.

Now his discovery has to be verified by other observers. But patience will be needed. The L_4 point (where Dr. Kordylewski thinks he saw something with the naked eye but which he did not photograph) will offer the right conditions around the middle of October and again around the middle of November (1961) for a few days each month. The L_5 point will not be favorably located until mid-January, 1962. But on each occasion the Smithsonian Astrophysical Observatory plans

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to go after it with the Baker-Nunn satellite-tracking cameras.

If this is successful we might try to obtain an idea of the density of these dust clouds by sending suitably instrumented rockets through them. At any event, our Earth does have extra satellites, even though they turned out to be entirely different from anything anybody ever predicted!

The Hidden Reptile

One might say that discoveries ran from A to Z in 1961, from astronomy to zoology, for the second discovery for which no date could possibly have been predicted was a zoological discovery.

The name of the lizard-like reptile in question is *Lanthanotus borneensis*. The second word just refers to its habitat, namely Borneo; the first word of the scientific name is based on the Greek root *lanthano* which means "to escape notice" or "to be unseen." Rarely has a scientific name fitted the facts so well.

Lanthanotus is around thirteen inches in length, more or less dirt-colored and also more or less dirt-covered. It burrows but can also hide at the bottom of a pool for as long as thirty minutes. It is not very active in daytime. On top of all that, it is so rare that last year quite a number of zoologists would have said that it might be extinct. But since one was caught alive in January, 1961, this opinion had to be dropped. Otherwise it is *lanthano* in every shade of the meaning of this word, and has been for decades.

Some of the things stated in the preceding paragraph could not have been said a year ago because they simply were not known. Though the animal was listed in rather specialized works and even had a 140-page "Bulletin" of the American Museum of Natural History devoted to it (the title: *The Systematic Position of Lanthanotus and the Affinities of the Anguinomorphan Lizards*, N. Y. 1954) it simply had never been observed alive!

Its discoverer was the Austrian traveller Friedrich Steindachner, from whose report the picture is taken. But Steindachner did not observe it alive. The drawing itself was made from a mounted specimen. This was in 1878. Gradually a few more specimens became known; there were three (now four) in the Sarawak Museum at Kuching, Borneo, right in its own habitat. The museum in Singapore had one, and there is a total of four or five in British and American museums and scientific institutions. In most cases the "lizards" had been brought in dead by native collectors.

When the zoologists of the

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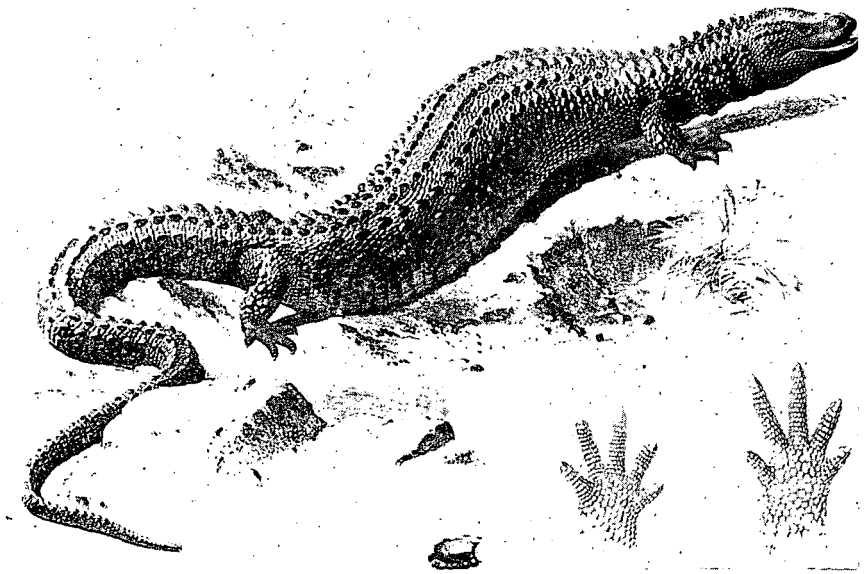

The first drawing of **Lanthanotus,** from Steindachner's report, 1878.

Kuching Museum got their live specimen they did not even know what it might eat. Since there is a not very close relationship between Lanthanotus and the monitor lizards, which are known to like eggs, both bird eggs and reptile eggs, one of the researchers offered a selection of eggs to Lanthanotus. It took the eggs of *Chelonia mydas,* the green turtle of the area. At first it played dead whenever it felt threatened (which was often) but later it actually became quite tame.

There had been a certain amount of apprehension among the researchers for it was generally accepted that Lanthanotus had two living relatives in the Western Hemisphere, the "beaded lizard" of Mexico and our own Gila Monster (which bears the sinister scientific name of *Heloderma suspectum,* the suspected nail-skin), both of which are poisonous. But Lanthanotus apparently is not poisonous. At any event it never tried to bite. It turned out to be a good swimmer and a slow burrower—its front legs are both small and weak—and in general behaved like a nocturnal snake.

The first specimen of Lanthanotus which could be observed in action died on April 11, 1961—apparently for the reason that it

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had to be transferred to another location where no turtle eggs were available. Chicken eggs did not seem to agree with it.

That an animal that had been known to science for eighty years could be observed for the first time is in itself an interesting story. It grows in interest if you know what could be deduced from the dead specimens which had been available all along.

In external shape Lanthanotus looks somewhat like a monitor lizard except for its small and weak legs. The real monitors have strong legs with powerful claws. Anatomists, going into fine detail about the shape and structure of teeth and bones, especially the bones of the skull, could write down a list of similarities. But they could also set down a list of dissimilarities, and when everything had been measured and compared you still had a great deal of free choice. Just in number of points the list of dissimilarities might be twice as long as the list of similarities. But which similarities (or dissimilarities) were important and which were not? One could not arrive at the conclusion that Lanthanotus was simply a smallish monitor with reduced legs, though a relationship of some kind indubitably existed.

One of the things which did not match was the tongue.

The tongue of Lanthanotus is most closely matched by that of the Gila Monster. Rather early, somebody had suggested that the Gila Monster of Arizona, the Mexican version of the Gila Monster and Lanthanotus belonged closely together. Again the list of dissimilarities was longer than that of similarities; and if zoologists until very recently mentioned the two species of Heloderma and Lanthanotus in one breath it was more for convenience than from conviction.

Then, in 1930, a new reptile became known from Kwangsi, southern China. It was named *Shinisaurus crocodilurus*—always remember that the Greek word *sauros* merely means "lizard"—and almost immediately the Baron von Nopcsa, one of the great paleontologists of our time, suggested looking into the relationship between the new Shinisaurus and the longer known Lanthanotus.

At first glance the similarities were strong. Both were of similar size; both have on their larger scales pustule-like organs which are believed to have a tactile function. Lanthanotus had, on occasion, been called an "earless monitor" because its scales go on without any interruption over the region of the ears. There is no external indication of where the ears are located. Shinisaurus

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turned out to be earless in the same manner. But again, it all ended up by stating that a close relationship, if one existed, could not be proved.

Now, whenever you can't locate any living relatives it is only logical to look for common ancestors—which, in this case, means that a survey of extinct reptiles was conducted.

Remember that there had been similarities between Lanthanotus on the one hand and the monitors on the other. There had been a few between Lanthanotus and Heloderma. Was there a point in the past where they all came together?

Yes, there was one, the group of reptiles called Platynota. The two species of Heloderma (plus fossil relatives) are supposed to be an early offshoot of this group. The next offshoot along the line were the monitors, and the next one after that the aigialosaurs. Few people have ever heard of the aigialosaurs; in fact, they are rather poorly treated even in handbooks. There are two reasons for this. One is that they simply are not well known. The other is that the aigialosaurs gave rise to another group of extinct reptiles which are much better known and also much more spectacular: the enormous mosasaurs, the famous "sea serpents" of the oceans of the Cretaceous period.

Where does Lanthanotus fit into this scheme?

The largest number of similarities is with the aigialosaurs. One might say that Lanthanotus is simply a still living (and, of course, somewhat modified) aigialosaurian. It therefore takes its place in the ranks of "living fossils."

To return to the present: at long last one could be observed alive for a few months. Of course the experts at the Sarawak Museum are loudly calling for another one, several if possible. And of both sexes. Up to August, 1961, collectors have not been able to oblige. Lanthanotus lives up to its name and is easily overlooked. Besides, it *is* rare.

Henri Moissan's Synthetic Diamonds

When I sit down to write an article I do so after having checked all the facts; when I answer a letter I sometimes just trust my memory. And that is how the remark about Henri Moissan's synthetic diamonds got into the August issue. Not less than three readers quoted a sentence from Isaac Asimov's *The Intelligent Man's Guide to Science* reading: "All this proved that Moissan and his contemporaries could no more have produced diamonds than the alchemists could have produced gold." The

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words "all this" in this quotation refer to a calculation about the necessary pressures and temperatures, e. g. 1500° Centigrade, with a pressure of 30,000 atmospheres.

Jim Blish also wrote me about that point, saying: "This is an example of fakery—though Moissan himself was not responsible: his assistant got tired of making these repeated messes with molten iron and cold water, and introduced a little diamond dust into the next mess . . . Moissan died believing he had succeeded, but in point of fact carbon is wholly soluble in molten iron, so it would diffuse too rapidly to make crystals — otherwise you would find them in tool steel."

Well, I take the implied advice. From now on every statement will be checked at least twice — but will I get the column out on time when I do that?

ANY QUESTIONS?

In an article on supersonic flight I just read the author kept talking about the motions of the air molecules. Is there such a thing as an "air" molecule?

Theo. J. Weise
Berkeley, Calif.

No, there is no such thing as an "air" molecule. The molecules in the air are nitrogen and oxygen molecules, with an occasional water or carbon dioxide molecule thrown in for variety. Speaking of "air" molecules, as if the air were a chemical compound, is quite sloppy but I must admit that I have done it myself on occasion; it is awkward to repeat terms like "the molecules composing our atmosphere."

Any book on astronomy contains the information that meteorites are either stones or iron with a high percentage of nickel. Is it possible that there are meteorites that are neither? Specifically, is it possible that some meteorites may be just ice?

Clarence Reilly
Washington, D. C.

A third type of meteorites has been established for quite a number of decades now: the "tektites," which are glass meteorites, consisting of a type of glass which resembles obsidian. It is partly because of this resemblance that a number of pieces are in doubt. Some experts consider them true tektites, while others think they might just be volcanic obsidian. But while there may be doubts about a specific find, the existence of glass-like meteorites is not doubted by anybody any more.

Whether ice meteorites exist is a question which has been debated since about 1920, if not

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longer. Theoretically they are possible, if large enough, but there is no actual proof. Hailstones weighing eight or nine pounds have been cited in this connection, since it was declared impossible for a hailstone of such size to form in the atmosphere. That statement is perfectly correct. They don't form in the atmosphere. They form on the ground, after hailstones of a more normal size have partly melted and then frozen together.

Then there is another possibility. A few years ago in West Germany somebody phoned a scientific institution, saying that a 16-pound hailstone or ice meteorite had landed in his backyard and that he had put it in his refrigerator. Well, it took the scientist some time to get there, and the man's refrigerator was not particularly cold, so that the hailstone had shrunk to a little over one pound when examined, but it was resting in a big pail of its own melting water. The very first thing the investigator noticed was that this water had a strong and unmistakable odor. It smelled of toilet soap. The origin of this hailstone had been the used water discharge valve of an airliner. Normally such water would vaporize before it had fallen very far, but in this case it must have collected somewhere on the outside of the plane, frozen into a big lump and finally broken off.

— WILLY LEY

★ ★ ★ ★ ★

FORECAST

One of the greatest names in science fiction has never before appeared in the page of *Galaxy*. As a matter of fact, he hasn't appeared anywhere recently, to the detriment of the field; so it is with a double joy that *Galaxy* welcomes in its next issue the author of *The Humanoids, Darker Than You Think, The Legion of Space* and a score of other science-fiction and fantasy classics. His name is, of course, Jack Williamson. The story is a novella called *A Planet for Plundering*. The planet in question is Earth; and the story is right off the top of a great talent.

There's more, of course. The cover story is another Jack Sharkey novella, *Big Baby*; there will also be another novelette or two, and the usual array of shorts. Avram Davidson's *The Tail-Tied Kings* is in the lineup. Back too is Arthur C. Clark with *Moondog*. Willy Ley will surely be with us — and as much more as we can crowd into what (we keep reminding you) is the biggest science-fiction magazine in the world.

We recommend the April issue. . .

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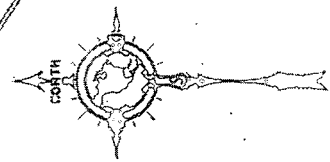
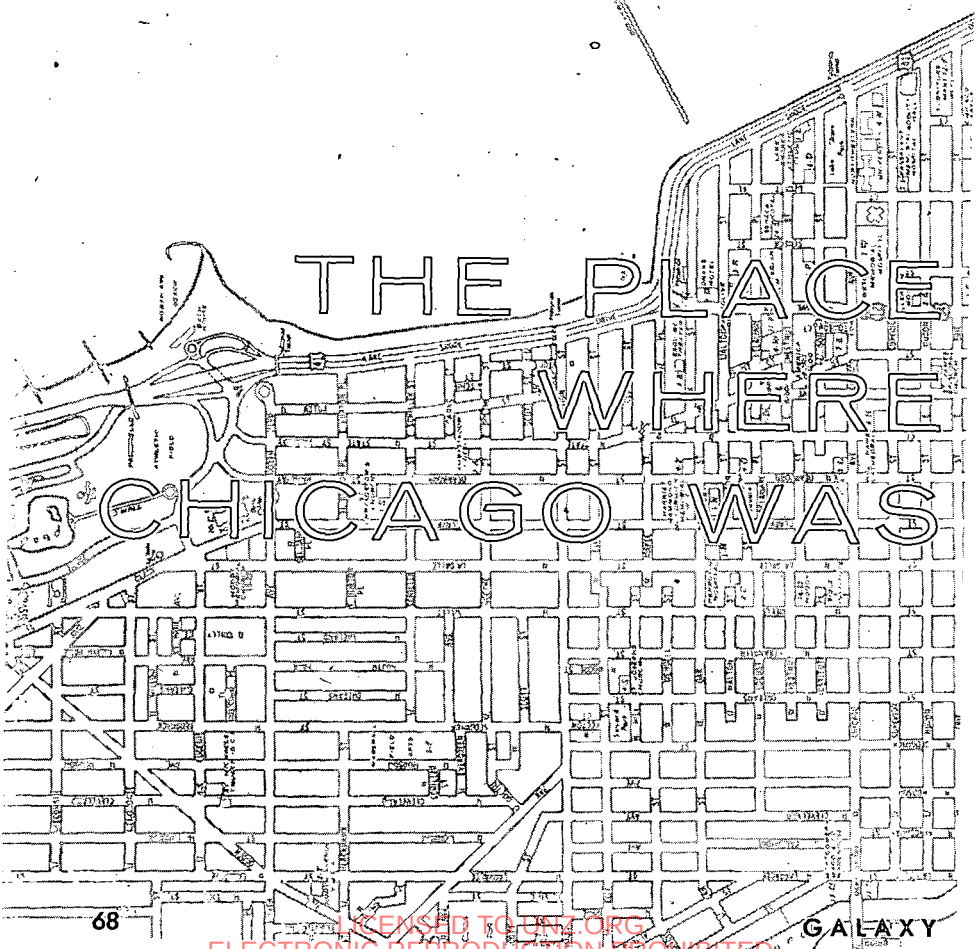
Well, they finally got rid of war. For the first time there was peace on Earth — since the only possible victims were the killers themselves!



THE PLACE WHERE CHICAGO WAS



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By JIM HARMON — Illustrated by COWLES

IT WAS LATE December of 1983. Abe Danniels knew that the streets and sidewalks of Jersey City moved under their own power and that half the families in America owned their own helicopters. He was pleased with these signs of progress. But he was sweating. He thought he was getting athlete's foot instead of athletic legs from walking from the New Jersey coast to just outside of Marshall, Illinois.

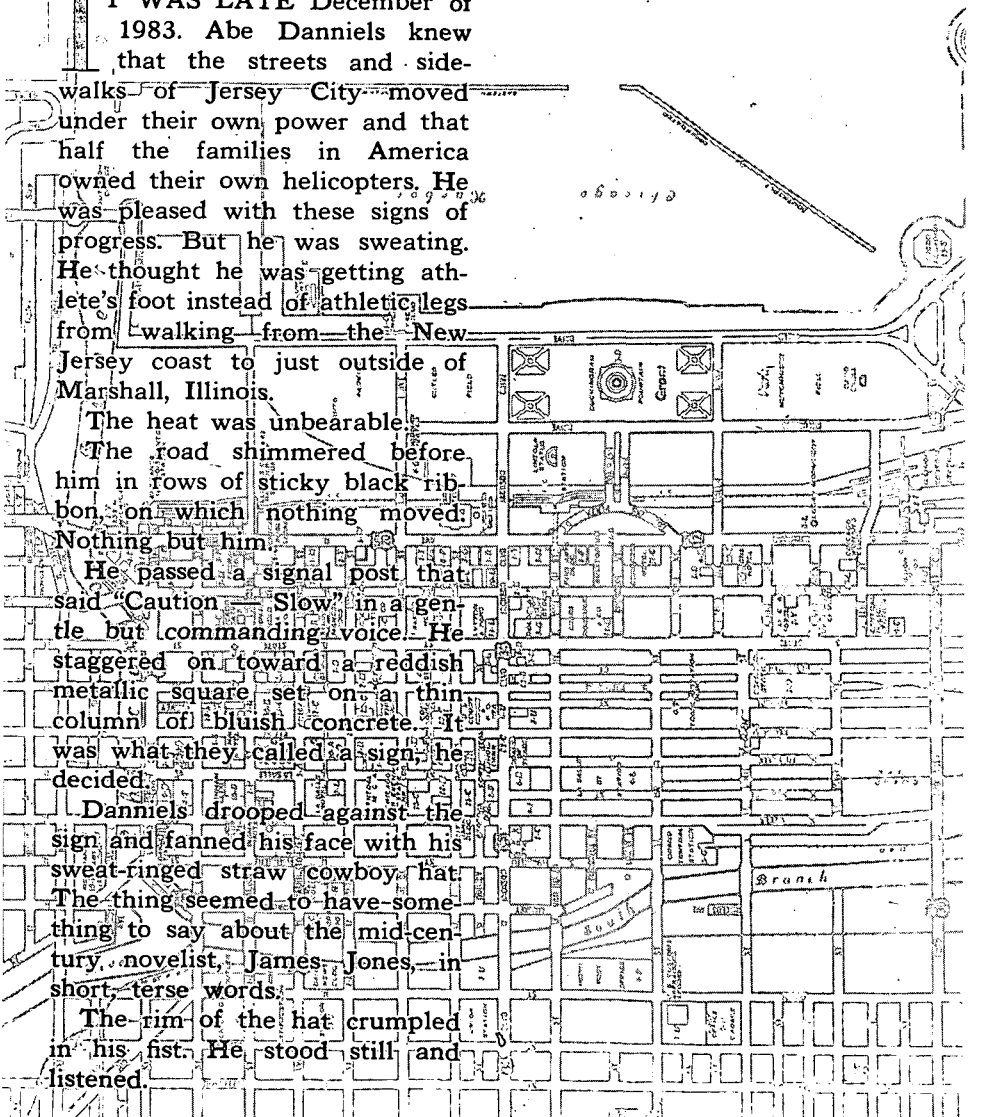
The heat was unbearable.

The road shimmered before him in rows of sticky black ribbon, on which nothing moved. Nothing but him.

He passed a signal post that said "Caution — Slow" in a gentle but commanding voice. He staggered on toward a reddish metallic square set on a thin column of bluish concrete. It was what they called a sign, he decided.

Danniels drooped against the sign and fanned his face with his sweat-ringed straw cowboy hat. The thing seemed to have something to say about the mid-century novelist, James Jones, in short, terse words.

The rim of the hat crumpled in his fist. He stood still and listened.



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There *was* a car coming.

It would almost *have* to stop, he reasoned. A man couldn't stand much of this Illinois winter heat. The driver might leave him to die on the road if he didn't stop. Therefore he would stop.

He jerked out the small pouch from the sash of his jeans. Inside the special plastic the powder was dry. He rubbed some between his hands briskly, to build up the static electricity, and massaged it into his hair.

The metal of the Jones plaque was fairly shiny. Under the beating noon sun it cast a pale reflection back at Danniels. His hair looked a reasonably uniform white now.

He started to draw the string on the pouch, then dipped his hand in and scooped his palm up to his mouth. He chewed on the stuff while he was securing the nearly flat bag in his sash. He swallowed the dough; the powder had been flour.

Danniels took the hat from beneath his arm, set it to his head and at last faced the direction of the engine whine.

The roof, hood and wheels moved over the curve of the horizon and Danniels saw that the car was a brandless classic which probably still had some of the original, indestructible Model A left in it.

He pondered a moment on whether to thumb or not to thumb.

He thumbed.

The rod squealed to a stop exactly even with him. A door unfolded and a voice like a stop signal said flatly, "Get in."

Danniels got in. The driver was a teen-ager in a loose scarlet tunic and a spangled W.P.A. cap. The youth wouldn't have been bad-looking except for a sullen expression and a rather girlish turn of cheek, completely devoid of beard line. Danniels wrote him off as a prospective member of the Wolf Pack in a year or two.

But not just yet, he fervently hoped.

"Going far? I'm not," said the driver.

Danniels adjusted the knees of his trousers. "I'm going to — near where Chicago used to be."

"Huh?"

Danniels had forgotten the youth of his companion. "I mean I'm going to where you can't go any further."

The driver nodded smugly, relieved that the threat to the vastness of his knowledge had been dismissed. "I get you, Pop. I guess I can take you close to where you're headed."

They rode on in silence, both relieved that they didn't have to try to span the void between age and position with words.

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"You aren't anywhere near starvation, are you?" the driver said suddenly, uneasy.

"No," Danniels said. "Anyway I've got money."

"Woodrow Wilson! I'll pull in at the next joint."

THE next joint was carved out of the flat cross-section of hill that looked unmistakably like a strip ridge of a Colorado copper mine, but wasn't . . . even barring the fact that this was Illinois. The rectangle of visible dinner was color-fused aluminum from between No. Two and Korea.

Danniels was glad to get into the shockingly cold air-conditioning. It was constant, if unhealthy. The chugging unit in the car failed a heartbeat every now and then for a sickening wave of heat.

The two of them pulled up wire chairs to a linoleum-top table in a mirrored corner. A faint purple hectographed menu was stuck between appropriately colored plastic squeeze bottles labeled MUSTARD and BLOOD.

Danniels knew what the menu would say but he unfolded it and checked.

Steaks

Plankton	.90
Juicy, rich-red tantalizing hamburger	.17

Accessories

Mashed potatoes	.40
Delectable oysters, all you can eat	.09
Peas	.35
Rich, fragrant cheese, large slice	.02

Drinks

Coke	.50
Milk, the forbidden wine of nature	.01
Coffee (without)	.50
Coffee (with)	.02

A fat girl in white came to the table.

Danniels tossed the menu on the table. "I'll take the meat dinner," he said.

The teen-ager stared hard at the table top. "So will I."

"Good citizens," the waitress said, but the revulsion crept into her voice over the professional hardness.

Danniels looked carefully at his companion. "You aren't used to ordering meat."

"Pop," the youth began. Danniels waited to be told that being short of cash was none of his business. "Pop, on my leg. Kill it, kill it!"

Danniels leaned over the table startled and curious. A cockroach was feeling its way along a thin meridian of vari-colored jeans. Danniels pinched it up without injuring it and deposited

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it on the floor. It scurried away.

"Your kind make me sick," the driver said in lieu of thanks. "You act like a Fanatic but you're a Meat-Eater. How do you blesh that?"

DANNIELS shrugged. He did not have to explain anything to this kid. He couldn't be stranded.

The kid was under the same encephalographic inversion as the rest of the world. No human being could directly or indirectly commit murder, as long as the broadcasting stations every nation on earth maintained in self-defense continued to function.

These mechanical brain waves coated every mind with enforced pacifism. They could have just as easily broadcast currents that would have made minds swell with love or happiness. But world leaders had universally agreed that these conditions were too narcotic for the common people to endure.

Pacifism was vital to the survival of the planet.

War could not go on killing; but governments still had to go on winning wars. War became a game. The International War Games were held every two years. With pseudo-H bombs and mock-germ warfare, countries still effectively eliminated cities and individuals. A "destroyed" city was off-limits for twenty years. Nothing could go in or out for that period. Most cities had provided huge food deposits for emergencies.

Before the Famine.

Some minds were more finely attuned to the encephalographic inversion than others. People so in tune with the wavelength of pacifism could not only not kill another human being, they could not even kill an animal. Vegetarianism was thrust upon a world not equipped for it. Some — like Danniels — who could not kill, still found themselves able to eat what others had killed. Others who could not kill or eat *any* once-living thing — even plants — rapidly starved to death. They were quickly forgotten.

Almost as forgotten as the Jonahs.

The War Dead.

Any soldier or civilian "killed" outside of a major disaster area (where he would be subject to the twenty years) became a man without a country — or a world. They were tagged with green hair by molecular exchange and sent on their way to starve, band together, reach a disaster area (where they would be accepted for the duration of the disaster), starve, or starve.

Anyone who in anyway communicated with a Jonah or even

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recognized the existence of one automatically became a Jonah himself.

It was harsh. And if it wasn't better than war it was quieter.

And more permanent.

The counterman with a greasy apron and hairy forearms served the plates. The meat had been lightly glazed to bring out the aroma and flavor but the blood was still a pink sheen on the ground meat. There were generous side dishes of cheese and milk. Even animal by-products were passed up by the majority of vegetarians. Eggs had been the first to be dropped — after all, every egg was a potential life. Milk and associated products came to be spurned through sheer revulsion by association. Besides, milk was intended only to feed the animal's own offspring, wasn't it?

DANNIELS squirted blood generously from its squeeze bottle. Even vegetarians used a lot of it. It gave their plankton the gory look the human animal craved. Of course it was not really blood, only a kind of tomato paste. When Danniels had been a boy people called it catsup.

He tried to dig into his steak with vengeance but it tasted of ashes. Meat was his favorite food; he was in no way a vegetarian. But the thought of the Famine haunted him. Vegetable food was high in price and ration points. Most people were living on 2500 calories a day. It wasn't quite starvation and it wasn't quite a full stomach. It was hard on anybody who did more than an average amount of work. It was especially hard on children.

The Meat-Eaters helped relieve the situation. Some, with only the minimum of influence from the Broadcasters, ate nothing but meat. They were naturally aggressive morons who were doing no one favors, potential members of a Wolf Pack.

Danniels knew how to end the Famine.

The mob that was the men he had commanded had hunted him in the hills below Buffalo, and he had been hungry, with no time to eat, or rest, or sleep. Only enough time to think. He couldn't stop thinking. Panting over a smothered spark of campfire, smoldering moss and leaves, he thought. Drinking sparkling but polluted water from a twisting mountain stream and trying unsuccessfully to trap silver shavings of fish with his naked hands, he thought.

His civilian job was that of a genopseudoxenobeastimacroiologist, a specialized field with peacetime applications that had come out of the War Games —

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specialized to an almost comic-opera intensity. He knew virtually everything about almost nothing at all. Yet, delirious with hunger, from this he fashioned in his mind a way to provide food for everybody. Even Jonahs.

After they caught him — weeks before the Tag spot would have faded off — he wasn't sure whether his idea had been a sick dream or not. But he intended to find out. He wouldn't let any other mob stop him from that.

Danniels had decided he was against mobs, whether their violence and stupidity was social or anti-social. People are better as individuals.

The driver of the hot-rod was also picking at his food uncertainly. Probably a social vegetarian, Danniels supposed. An irresponsible faddist.

The counterman stopped staring and cleared his throat apologetically. "This ain't the Ritz but it don't look good for customers to sit with hats on."

Danniels knew that applied to only non-vegetarians, but he put his Stetson, reluctantly, on an aluminum tree.

THE teen-ager looked up. And did not go back to the food.

Danniels knew that he had been found out.

The counterman went back to wiping down the bar.

The youth was still looking at Danniels.

"You better eat if you don't want me to be discovered," Danniels said gently.

Young eyes moved back and forth, searching, not finding.

"It won't do you any good to run," Danniels continued. "The waitress and the counterman will swear they had nothing to do with me. But you were driving me, eating with me."

"You can't let even a Jonah die," the youngster said in a hoarse whisper that barely carried across the table.

Danniels shook his head sadly. "It won't work. You might have slowed down enough to let me grab onto the rear bumper or tossed me out some food. But you took me into your car, sat down at a table with me."

"And this is the thanks I get!"

Danniels felt his face flush. "Look, son, this isn't a game where you can afford to play by good sportsmanship. That's somebody else's rules, designed to make sure you get at least no better a break than anyone else. You have to play by your rules — designed to give *you* the best possible break. Let's get out of here."

He wolfed the last bite and jammed his hat back on his head, pulling it down about his ears. The sweat band had rubbed

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the flour off his hair in a narrow band. A band of green. The mark of the Jonah.

In the last war games, Danniels had come into the sights of a Canadian's diffusion rifle. For six months he had worn a cancerous badge of luminosity over his heart. Until his comrades had trapped him and through a system similiar to the one their rifles employed turned his hair to green and cast him out.

Danniels scooped up both checks and with deep pain paid both of them to save time. He wanted to get his companion out of there before he broke.

The heat struck at their faces like jets of boiling water. The authorities said nuclear explosion had had nothing to do with changing climatic conditions so radically, but *something* had.

The two of them were walking towards the parked car when the Wolf Pack got to them.

II

THE horrible part was that Danniels knew they wouldn't kill him. No one could kill.

But the members of the Wolf Packs wanted to. They were the professional soldiers, policemen, prizefighters and gangsters of a society that had rejected them. They were able to resist some of the pacifism of the Broadcasters. In fact, they were able to resist quite a lot.

The first one was a round-shouldered little man with silver spectacles. He kicked Danniels in the pit of the stomach with steel-shod toes. A clean-cut athletic boy grabbed the running teen-ager and ripped the red tunic halfway off. From the pavement Danniels at last isolated the doubt that had been nagging him. His companion wore a tight tee-shirt under the coat. She was a girl.

Danniels saw a heavy shoe aimed at his face but it went far afield. Running feet went past him completely.

He was left alone, unharmed, with only the breath knocked out of him momentarily.

They were closing in on the girl who had picked him up.

This Pack was all men, although there were female and co-ed groups just as vicious. Beating up a girl, Danniels knew, would give an added sexual kick to their usual masochosadism.

They were a Pack. A mob. They were like the soldiers who had hunted him down and had him permanently tagged a Jonah. His men had been looked upon favorably by his society, while the Wolf Pack was so ill-favored it was completely ignored in absolute contempt. But

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they were the same in the essentials: a mob.

And once again Danniels, who was incapable of harming the smallest living creature, wanted to kill men. But he couldn't.

All his life he had experienced this mad fury of desire and it shamed him. He wanted to destroy men of stupidity, greed and brutality on sight. Any other kind of conflict with them was weak compromise.

At times, he wondered if this atavistic if pro-survival trait had not shamed him so much that he over-compensated for it by violently refusing to take any kind of life. Like all men of his time, he asked himself: how much of my mind is the Broadcasters' and how much me?

If he couldn't destroy, he could defend.

With the idea still only half-formed, he lurched to his feet and stumbled into the side of the hot-rod. He fumbled open the heated metal door and slid under the wheel.

He thumbed the drive on savagely and roared down on the mob.

Rubber screamed, whined and smelled as he applied the brakes just soon enough for the men to jump out of the way — away from the girl.

He folded back the door he hadn't latched, leaned down, grabbed the teen-ager by the leg and dragged her bruised form bumping up into the car.

The little man with silver glasses tried to reach into the car.

Danniels swung the door back into his face.

The glasses didn't break; but everything else did.

With one foot under the girl and the other on her, Danniels tagged the illegal acceleration wire most cars had rigged under the dashboard and raced away into the brassy sunshine.

SHE was slouched against his shoulder when the stars blazed out in the moonless night.

Tires hummed beneath them and their headlights ate up the white-striped typewriter ribbon before them.

The girl opened her eyes, hesitated as they focused on the weave pattern of denim in his shirt, and said, "Where are they?"

"Back there some place," Danniels told her. "They followed in their cars, a couple on motorcycles. But they must have been scared of traffic cops on the main highway. They dropped out."

She sat up and ran her fingers through her cropped mouse-colored hair. Her quick glance at him was questioning; but she

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answered her own question and reluctantly absorbed the truth of it. She knew he knew.

The girl huddled in the tatters of her bright tunic.

"Just what do you expect to get out of helping me?" she asked.

Danniels kept his eyes on the road. "A free trip to Chicago."

"You'll get us both arrested!" she shrilled. "Nobody can get past those roadblocks."

He nodded to himself, not caring if she saw the gesture in the uncertain light from the auto gauges.

"All right," she admitted. "I know what Chicago is. That's no crime."

"You ought to," Danniels said. "You're from there."

She was tired. It was a moment before she could continue fighting. "That's foolish —"

He hadn't been sure. If she hadn't hesitated he might have given up the notion.

"That getup was what was foolish," Danniels snorted. "Anybody would know you were trying to hide something as soon as they found out the masquerade."

"You wouldn't have found it out," she said, "if one of that Pack hadn't torn my jacket off."

"I really don't know. It might be animal magnetism, if there is such a thing. But I can't be around a woman for long without knowing it. I repeat: why?"

"I — I didn't know what they would do to a girl outside."

"For Peace sake, why did you have to come out at all?"

The girl was silent for a mile.

"Most Chicagoans think the rest of the world has reverted to barbarism," she told him.

"A common complaint of city dwellers," he observed.

"Don't joke!" she demanded. "Our food is running out. We have enough to last five more years if the present birth-death cycle maintains itself."

DANNIELS whistled mournfully.

"And you have — let's see — about seven more years to go."

She nodded.

"I came out to see what chance there was of ending this senseless blockade."

"None at all," he snapped. "No one is going to risk breaking the rules of the War Games just to save a few million lives."

"But they will have to! The Broadcasters will make them."

"You would be surprised at how much doublethink people can practise about not killing," he assured her from bitter, personal experience. "They don't *know* for certain that you will be starving in there, so they will be free to keep you inside."

The girl straightened her

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shoulders, emphasizing the femininity of her slender form.

"We'll tell them," she said. "*I'll* tell them."

Danniels almost smiled, but not quite. His hands tightened on the steering wheel and he kept his eyes to the moving circle of light against the night.

"You open your mouth about Chicago to the authorities or anyone else and they will slap you under sedation and keep you there until you die of old age. They used to drop escapees back into the cities by parachute. But too many of them were inadvertently killed; they are more subtle these days. By the way," he said very casually, "how *did* you escape?"

She told him where to go in a primitive, timeless fashion.

"No," Danniels said. "I'm going to Chicago."

"Not with me," the girl assured him quietly. "We have enough to feed without bringing in another Jonah. Besides you might be an F.B.I. man or something trying to find our escape route."

"I'd be a Mountie then. The F.B.I. has deteriorated pretty badly. Spent itself on political security. The Royal Canadian Mounted Police lends us men and women during peacetime. Up until the War Games anyway — even though Britain would like to see us *constantly* disrupted. But," he said heavily, "I am not a government agent of any kind. Just the Jonah I appear to be."

SHE shivered. "I can't take the responsibility. I can't either expose our escape route — or bring in another mouth, to bring starvation a moment closer."

"Look, what can I call you?" he demanded in exasperation.

"Julie. Julie Amprey."

"Abe Danniels. Look, Julie—"

"You were named after Lincoln?" she asked quietly.

"A long time after. Look, Julie, I want to get into Chicago because of the old Milne Laboratories." He caught his breath for a long second. "They are still standing?"

Julie nodded and looked ahead, through the insect-spotted windscreen. "Partial operation, when I left."

Danniels gave a low whistle. "Lord, after all these years!"

"We manage."

"Fine! Julie, I'm sure that if I can get back in a laboratory I can find a way of ending this condemned Famine — inside Chicago and outside."

"That sounds a little like delusions of grandeur to me," the girl said uncertainly.

"It was my field for ten years. Before the last War Games. I had time to think while my pla-

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toon was hunting me down, after I had been tagged out. I thought faster than I ever thought before."

Julie studied his face for a long moment.

"What was your idea?"

"The encephalographic inversion patterns of the Broadcasters," he said quickly, "can be applied to animals as well as human beings, on the right frequencies. Even microscopic animals. Bacteria. If you control the actions of bacteria, you control their reproduction. They could be made to multiply and assume different forms — the form of food, for example."

Danniels took a deep breath and plunged into his idea as they drove on through the deepening night. He talked and explained to her, and, in doing so, he clarified points that he hadn't been sure of himself.

He stopped at last because his throat was momentarily too dry to continue.

"It's too big a responsibility for me," Julie said.

Defeat stung him so badly he was afraid he had slumped physically. But it won't be permanent defeat, he told himself. I've come this far and I'll find some other way into Chicago.

"I haven't the right to turn down something this big," Julie said. "I'll have to let you put it to the mayor and the city council."

He relaxed a trifle, condemning himself for the weak luxury. He couldn't afford it yet. He ran his fingers through his flour-dusted green hair and the electricity of the movement dragged off much of the whiteness. His skin, like that of most people, had been given a slight negative charge by molecularization to repell dirt and germs. The powder was anxious to remove itself and dye or bleach refused to take at all.

"We're nearing the rim of the first blockade zone," Danniels told the girl. "Where to?"

"Circle around to first unrestricted beach of the lake shore."

"And then."

"Underwater."

ILLEGAL traffic in and out of Disaster Areas was not completely unheard of. There was a small but steady flow both ways that the authorities could not or would not completely check. The patrols seemingly were as alert as humanly possible. Capture meant permanent oblivion for Disaster Residents under sedation, while Outsiders got prescribed periods of Morphinvert-induced antipode depression of the brain, a rather sophisticated but effective form of torture. A few minutes under the drug fre-

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quently had an introspective duration of years. Therefore, under the typical sentence of three months, a felon lived several lifetimes in constant but varying stages of acute agony and post-hysteric terror.

While few personalities survived, many useful human machines were later salvaged by skillful lobotomies.

Lake Michigan beaches were pretty good, Danniels observed. Better than at Hawaii. This one had been cleaned up for a subdivision that had naturally never been completed. It had been christened Falstaff Cove, although it was almost a mathematically straight half mile of off-white sand.

He had shifted to four-wheel drive at the girl's direction and bored through the sand to the southernmost corner of the beach, where it blurred into weeds, rocks, dirt and incredible litter. He braked. The car settled noticeably.

"There's a two-man submarine out there in the water under the overhang," Julie said without prompting. "We got it from the Armed Forces Day display at Soldier's Field."

"What I'd like to know is how you get the car in and out of it?" Danniels said.

Anger, disgust and fatigue crossed the girl's face. It was after all, a very young face, he thought. "We have Outside contacts of sorts," she said. "Nobody trusts them very much."

He nodded. There was a lot of money in the Federal Reserve Vaults inside the city.

The two of them got out of the car.

Julie stripped off her jeans, revealing the bottom half of a swimsuit and nicely turned, but pale, legs. "We'll have to wade out to the sub."

"What about the car?" Danniels asked. "Is your friend going to pick it up?"

"No! They don't know about this place."

He reached in the window and turned the ignition. "Want me to run it off into the water? You don't want to tag this spot for the authorities."

"No, I — I guess not. I don't know what to do! I'm not used to this kind of thing. I don't know why I *ever* come. We paid an awful lot for the car . . ."

He found the girl's wailing unpleasant. "It's your car, but take my advice. Let me get rid of it for you."

"But," she protested, "if you run it into the water they can see from the air in daylight. I know. They used to spot our sub. Why not run it off into those weeds and little trees? They'll hide it and maybe we could get it later."

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It wasn't a bad idea but he didn't feel like admitting it. He gunned the rod into the tangle of undergrowth.

DANNIELS came back to the girl with his arms and face laced with scratches from the limbs.

He tried to roll his trousers up at the cuff but they wouldn't stay. So he would spend a soggy ten minutes while they dried.

He told the girl to go ahead and he went after her, marking the spongy wet sand and slapping into the white-scummed, very blue water.

The tiny submarine was just where Julie had said it would be. He waited impatiently as she worked the miniature airlock.

They squeezed down into the metallic hollowness of the interior and Julie screwed the hatch shut, a Mason lid inappropriately on a can of sardines.

There were a lot of white-on-black dials that completely baffled Danniels. He had never been particularly mechanically minded. His field was closer to pure science than practical engineering. Because of this, rather than in spite of it, he had great respect for engineering.

It bothered him being in such close quarters with a woman after the months of isolation as a Jonah, but he had enough of the conventions of society fused into him and enough other problems to attempt easing his discomfort.

"It isn't much further," Julie at last assured him.

He was becoming bored to the point of hysteria. For the past several months he hadn't had much diversion but he had not been confined to what was essentially an oil drum wired for light and sound.

One of the lights changed size and pattern.

He found himself tensing. "That?" He pointed.

"Sonadar," Julie hissed. "Patrol boat above us. Don't make any noise."

Danniels pictured the heavily equipped police boat droning past above them and managed to keep quite silent.

Something banged on the hull.

It came from the outside and it rang against the port side, then the starboard. The rhythm was the same, unbroken. Danniels knew somehow the noise from both sides were made by the same agency. Something with a twelve-foot reach.

Something that knew the Morse code.

Da-da-da. Dit-dit-dit. Da-da-da.

S. O. S.

Help.

"It's not the police," Julie said. "We've heard it before."

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She added, "They used to dump non-dangerous amounts of radioactives into the lake," as she decided the police boat had gone past and started up the engines again.

Danniels never forgot that call for help. Not as long as he lived.

III

THE electron microscope revealed no significant change in the pattern of the bacteria.

Danniels decided to feed the white mice. He got out of his plastic chair and took a small cloth bag of corn from the warped, sticking drawer of the lab table.

Rationing out a handful of the withered kernels, he went down the rows of cages. A few, with steel instead of aluminum wiring, were flecked with rust. The mice inside were all healthy. Danniels was not using them in experiments; he was incapable of taking their lives. But some experimenter after him might use them. In any case, he was also incapable of letting them starve to death.

He had been out of jail less than two weeks.

The city council had thrown him into the Cook County lockup until they decided what to do with him. He hadn't known what happened to the girl, Julie Amprey, for bringing him back with her.

He was surprised to see Chicago functioning as well as it was after thirteen years of isolation. There were still a few cars and trucks running here and there, although most people walked or rode bicycles. But the atmosphere seemed heavy and the buildings dirtier than ever. The city had the aura of oppression and decay he thought of as belonging to nineteenth century London.

Danniels had waited out New Year's and St. Valentine's in a cell between a convicted burglar and an endless parade of drunks. Finally, two weeks ago the mayor himself came, apologizing profusely but without much feeling. Danniels was escorted to the old Milne Laboratory buildings and told to go to work on his idea. He had, they said, two weeks to produce. And he was getting nowhere.

His deadline was up. The deadline of the real world. But the one he had given himself was much, much more pressing.

"You'll kill yourself if you don't get some sleep," the girl's voice said behind his back.

Danniels closed the drawer on the nearly depleted sack of grain. It was the girl. Julie Amprey. He had been expecting her but not anticipating her. He didn't

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like her very much. The only reason he could conceive for her venture Outside was a search for thrills. It might be understandable, if immature, in a man; but he found it unattractive in a woman. He had no illusions about masculine superiority, but women were socially, if not physically and emotionally, ill-equipped for simple adventuring.

Julie was more attractive dressed in a woman's clothes, even if they were a dozen years out of style. Her hair had a titian glint. She was perhaps really too slender for the green knit dress.

"IT'S a big job," he said. "I'm beginning to think it's a lifetime job."

He half-turned and motioned awkwardly at the lab table and the naked piece of electronics.

"That's the encephalographic projector I jury-rigged," he explained.

"You can spare me the fifty-cent tour," Julie said.

He wondered how she had managed to get so irritating in such a short lifetime. "There's not much else to see," Danniels grunted. "I've got some reaction out of the bacteria, but I can't seem to control their reproduction or channel them into a food-producing cycle."

Julie tossed her head.

"Oh, I can tell you why you haven't done that," she said.

He didn't like the way she said that. "Why?"

"You don't *want* to control them," Julie said simply. "If you really control them, you'll cause some to be recessive. You'll breed some strains out of existence. You'll *kill* some of them. And you don't want to kill any living thing."

She was wrong.

He wanted to kill her.

But he couldn't. She was right about the bacteria. He should have realized it before. He had planned for almost a year, and worked for two weeks; and this girl had walked in and destroyed everything in five minutes. But she was right; he spun towards the door.

"Where are you going?" she demanded.

"I'm leaving. See what somebody else can do with the idea."

"But where are you going?" Julie repeated.

"Nowhere."

And he was absolutely right.

Danniels walked aimlessly through the littered streets for the rest of the day and night. He couldn't remember walking at night, but neither could he remember staying anywhere when he discovered dawn in the sky.

It was that time of dawn that looks strangely like an old two-

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color process movies that they show on TV occasionally — all orange and green, with no yellow to it at all, when even the truest black seems only an off-brown or a sinister purple.

He shivered in the chill of morning and decided what to do.

He would have to walk around for a few hours even yet.

THE drink his friend, Paul, placed before him was not entirely distinct. Neither were the bills he had in his hand. It was money the mayor's hireling had given him to use for laboratory supplies. Danniels peeled off a bill of uncertain denomination and gave it to his friend. Paul seemed pleased. He put it into the pocket of his white shirt, the pocket eight inches below and slightly to the left of the black bow tie, and polished the bar briskly.

Danniels picked up the glass and sipped silently until it was empty.

"Do you want to talk about anything, Abe?" Paul asked solicitously.

"No," Danniels said cheerfully. "Just give me another drink."

"Sure thing."

Danniels studied his green hair in the glass. Here, the mark of the Jonah wasn't important. Not yet. But he would be unwelcome even here after the time of Disaster ran out. He would have to move on sooner or later. Eventually — why not now? That slogan went better than the one in pink light over the mirror — The Beer That Made Milwaukee Famous. There hadn't been any Milwaukee beer here for thirteen years. Most of the stuff came out of bathtubs.

Why not now?

He smoothed another bill on the damp polished wood and negotiated his way through the hazy room.

Outside, he turned a corner and the city dropped away from him. He seemed to be in a giant amusement park with acres of empty ground patterned off in squares by unwinking dots of light.

He grinned to himself, changed direction with great care, and started down the one-way street to the lake front.

He heard the footsteps behind him.

Danniels put his palm to the brick wall, scaling posters, and turned.

The clean-cut young man smiled disarmingly. "I saw you in at Paul's. You'll never make it home under your own power. Better let me take you in my cab."

Danniels knocked him out on his feet with a clean right cross.

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He blinked down at the boy. Self-preservation had become instinctive with him during his months as a wandering Jonah.

Gnawing at his under lip, he studied the twisted way the supposed cabbie lay. If he really were . . . Danniels patted the man down and brought something out of a hip pocket.

He inspected the leather blackjack, weighing it critically in his hand.

It slid out of his palm and thudded heavily on the cracked sidewalk.

Danniels shrugged and grinned and moved unsteadily away. Towards the lake.

The lake looked gray and winterish.

There was no help for it.

Danniels swung his leg over the rust-spotted railing and looked down to where the water lapped at crumbling bricks blotched with green. He peered out over the water. Only a few miles to the beach where he had left the car parked in the undergrowth. He would have preferred to use the little sub, but he could swim it if he had to.

The surface below showed clearly in the globe lights.

Danniels dived.

Before he hit the water, he remembered that he should have taken off some of his clothes.

When he parted the icy foam with his body, he knew he had committed suicide. And he realized that that had been what he intended to do all along.

THERE was something in the lake holding him, and it had a twelve-foot reach.

It kept holding on to him under the surface of green ice and begging him for help. He couldn't breathe, and he couldn't help. Of the two, not being able to help seemed the worse. Not breathing wasn't so bad . . . It hurt to breathe. It choked him. It was very unpleasant to breathe. He had much preferred not breathing to this . . .

Some time later, he opened his eyes.

A small, round-faced man was staring down at him through slender-framed spectacles. For a moment he thought it was the man in whose face he had smashed the car door at the diner weeks before. But this man was different — among other things his glasses were gold, not silver. Yet he was also the same. Danniels knew the signs of the Wolf Pack.

"How's your foot?" the little man asked in a surprisingly full-bodied voice.

Danniels instantly became aware of a dull sub-pain sensation in the toes of his left foot. He looked over the crest of his

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chest and saw the foot, naked below the cuff of his wrinkled trousers. The three smaller toes were red. No, maroon. A red so dark it was almost black. Fainter streaks of red shot away from the toes, following the tendon.

Danniels swallowed. "The foot doesn't *feel* so bad, but I think it *is*."

"We may have to operate," the small man said eagerly.

"How did I get out of the lake?"

"Joel. The man you knocked out. He came to and followed you. Naturally, he had to save your life. He banged your foot up dragging you ashore."

Or afterwards, Danniels thought.

Abruptly, the stranger was gone and a door was closing and latching on the other side of the room.

Danniels tried to rise and fell back, his head floating around somewhere above him. Maybe a Wolf Pack member would have to save his life but he wouldn't have to bring him home and nurse him back to health.

Why?

He fell asleep without even trying to guess the answer.

He woke when they brought food to him.

Danniels finished with the tray and sat it aside.

The small man who had identified himself as Richard beamed. "I think you are strong enough to attend the celebration tonight."

Danniels did feel stronger after rest and food, but at the same time he felt vaguely dizzy and his leg was beginning to hurt. "What kind of a celebration?" he asked.

Richard chuckled. "Don't worry. You'll like it."

Danniels had seen the same expression of the faces of hosts at stag dinners; but with a Wolf Pack it was hard to know what to expect.

IV

THE place he was in did not seem to be a house after all.

Danniels leaned on the shoulder of Richard, who helped him along solicitously. They entered a large chamber nearly a hundred feet wide. There were people there. It wasn't crowded but there were many people standing around the walls. A lot of them were holding three-foot lengths of wood.

Richard led him to a chair, the only one apparent in the room.

"I'll go tell we're ready now," the small man said, chuckling.

Danniels looked around slowly at the shadowed faces. Of those holding clubs, he knew

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only the man Richard had told him was Joel, the man who had pulled him from Lake Michigan. Apparently the ones with clubs were members of the Pack, while the others were observers and potential members. Among these, he spotted a member of the city council.

And Julie.

She stood in a loose sweater and skirt, her hands hugging her elbows, eyes intent on the empty center of the room. Danniels was reminded of some of the women he had seen at unorthodox political meetings.

Danniels was surprised to find that he wanted to talk to her. He might try hobbling over to her or calling her over to hm. But with the instinct he had developed while being hunted, he knew it was wrong to call attention to the two of them together.

He noticed that he was in line with the door. Julie would have to pass by him when she left . . . after the celebration.

"The celebration begins in five minutes."

Someone he hadn't seen had shouted into the big room. The words bounced back slightly and hung suspended.

The people's waiting became an activity. Tension lived in the room.

And then the cat was released.

The Pack members moved apart from the rest and struck at the scrawny yellow beast. The cat didn't make it very far down the line. The men from the other end of the room moved up quickly to be in on the kill.

The clubs rose and fell even after it was clear there was no reason for it.

Their ranks parted and they left their handiwork where it could be admired.

It must be hard to find animals in a closed city like this, Danniels thought. It must be quite a treat to find one to beat to death.

He sat and waited for them to leave. But he found the Celebration was just beginning. The group was laughing and talking. Now that it was over they wanted to talk about it the rest of the evening. They had created death.

He searched out Julie Amprey again. She was looking at what they did. He thought she was sick at first. His lips thinned. Yes, she was sick.

Her eyes suddenly met his. Shock washed over her face, and in the next moment she was moving to him.

"So," she said coolly "you found out my little secret. This is where I get my kicks."

He nodded, thinking of nothing to say.

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"Did you ever read them?" she asked breathlesly. "All the old banned books — Poe and Spillane and Proust. The pornography of death. I grew up on them, so you see there's no harm in them. Look at me."

"You want to kill?" Danniels asked her.

She lit an expensive king-size cigarette. "Yes," she exhaled. "I thought I might join a Pack on the Outside. But, you'll remember, I didn't quite make it. I couldn't even kill a cockroach. I want to, but the damned Broadcasters keep interfering with me."

Richard came back, smiling broadly. "Well, Abe, has Miss Amprey been telling you of our plans to ruin the planet?"

DANNIELS was incredibly tired. He had been listening and arguing for hours.

"You're a scientist," Joel persisted. "Help us."

"There are different kinds of scientists," Danniels repeated. "I'm not a nuclear physicist."

"Right there." Richard tapped the pink rubber of his pencil against the map of Cook County. "Right there. An Armory no one else knows anything about. Enough H-bombs to wipe out human life on the planet. And rockets to send them in."

"The councilman may be lying," Danniels said. "How do you think he should happen to find it and no one else?"

"The information was in the city records," Richard said patiently, "but buried and coded so it would take twenty years to locate. Bureaucracy is an insidious evil, Abe."

Danniels rubbed his face with his palms. "I'm not even sure if I understand what you mean to do. You want to rocket the H-bombs out almost but not quite beyond Earth's gravitation and explode them so the fallout will be evenly distributed over the surface of the planet. You think it will cause no more than injury and destruction —"

"That's all," Joel said sharply.

Richard gave an eager nod.

They had had to convince themselves of that, he knew. "But why do you want to do anything as desperate as that?"

"Simple revenge." Richard's tone was even and cold. "And to show them what we can do if they don't cut off the Broadcasters." The small man's liquid brown eyes softened. "You've got to understand that we really don't want to kill people. Our actions are merely necessary demonstrations against insane visionary politics. I only want the Broadcasters shut off so I can do efficient police work — Joel, so that he can fight in the

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ring with the true will to win of a sportsman. The rest of us have equally good reasons."

"I think I understand," Danniels said. "I'll do what I can to help you."

DANNIELS was not surprised when Julie Amprey was in the raiding party. He was past the capacity for surprise.

He was getting around on his own today only because he was learning to stand the pain. It was worse. And he was weak and dizzy from a fever.

They had all managed to produce bicycles. Richard had even managed to find one for him with a tiny engine powered by solar-charged batteries.

Julie looked crisp and attractive in sweater and jeans. Joel was strikingly handsome in the clear sun, and even Richard looked like a jolly fatherly type.

As they wheeled down the street, Danniels was afraid only he with his wet, tossed green hair and drooping cheeks warped the holiday mood of those who in some other probability sequence were happy picnickers.

When they reached the place, Richard giggled nervously.

"It takes a code to open the hatch," he explained. "If Aldrich didn't decode it correctly there will be a small but effective chemical explosion in this area."

Danniels leaned against a maple, watching. The bicycles were parked in the brush and a shallow hole had been dug at an exact spot in the suburban park. Only a few inches below ground was the gray steel door flush with the level of grass.

Richard hummed as he worked a prosaic combination dial.

Finally there was a muffled click and a churning whine began.

The hatch raised jerkily and latched at right angles.

The Pack milled about the opening, excited. Joel got the honor of going down first. Richard seemed to fumble his chance for the glory, Danniels observed. The other men went down, one and one. And finally only Julie and Richard were left. He supposed that this meant the girl had been accepted as a full member of the Wolf Pack. That would change the whole character of the organization. He vaguely wondered who her sponsor was. Joel?

Julie and the little man came to him. They started to help him down into the opening and suddenly he was at the bottom of a ladder. Things were beginning to seem to him as if they were taking place underwater.

They walked down a corridor of shadow, lit only by tarnished

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yellow from red sparks caught on the tips of silver wire inside water-clear bulbs recessed in the concrete ceiling.

When they passed a certain point sparks showered from slots in opposite walls. They burned out ineffectively before they reached the floor of cross-hatched metallic mats.

"Power failing," Richard observed with a chuckle. "Congress should investigate the builders."

There was a large, sliding door many feet thick but so well-balanced it slid open easily. And they were there.

IT was a big room full of many little rooms. Each little room had a door that a man could enter by stooping and a chair-ledge inside for him to sit and read or adjust instruments. The outside of the rooms were finished off cleanly in shining metal with large, rugged objects fitted to all sides. These were hydrogen bombs.

The Wolf Pack ranged joyously through the maze.

Danniels found one of several stacks of small instruments and sat down on it. The things looked like radios but obviously weren't.

Richard came to him, wringing his hands. "These bombs seemed to be designed to be dropped from bombers. There are supposed to be rockets here too. I hope the H-bombs will fit. They seem so bulky . . ."

"Perhaps the rockets have self-contained bomb units," Danniels suggested.

"Perhaps. We're all going off and try to find the rockets. You'd be amazed at all the cutoffs down here. I'll leave Joel here to look after you."

Danniels sat on the instruments. Joel stayed several hundred feet away, an uncertain shadow in the light, smoking a red dot of a cigarette. Somehow Danniels associated fire and munitions instead of atomics and felt uneasy.

He discovered Julie Amprey at his side. She didn't say anything. She seemed to be sulking. Like a spoiled brat, he thought.

He fingered one of the portable instruments from an open crate beside him. "Wonder what these are?" he said to break up the heavy silence.

"Pseudo-H Bombs," the girl snapped.

Of course. Just as money had to be backed by gold or silver reserves, every pseudo bomb or mock-gas had to be backed by the real thing which, after its representative had been used, was dismantled, neutralized or retired. International inspection saw to that.

"There's enough here to blow

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up the whole world . . . if they were real," Danniels said.

The girl pointed out into the chamber. "Those *are* real."

Each nation had many times over the nuclear armament necessary to destroy human life. There was enough for that right in this vault — both in reality and in the Games.

Danniels stopped drifting and took a course. He stopped observing and began to act. There was a mob in action.

Even if they did somehow manage not to kill off the population with the fallout they were engineering, they would ruin farmland, create new recessive mutations.

Famine would cease to be a psychological affliction for half the world and become a physiological reality instead . . . for all the world.

He had failed in his plans to end the psychological Famine because of his own attunement to the Broadcasters. He wouldn't fail in stopping the new physiological Famine.

V

"PUT that thing down," Joel said. "I don't trust you any further than I can spit, and that looks like a radio. You trying to warn the city council?"

Danniels put down the instrument. One wouldn't do it, and he could tell from Joel's eyes that he would get a very bad experience out of disobeying him.

"You were going to do something," Julie said. "What were you trying to do with that pseudie?"

"How do you know so much about this stuff?" Danniels demanded.

"My father told me all he found out from the records. He's Councilman Aldrich."

He rested his eyes for a second. "But your name —?" he heard himself say.

"My stepfather, I should have said. Mother married him when I was two. *What were you going to do?*"

"I," he said, "intended to end it all. All of this. All of it Outside. End everything."

The girl turned from him.

"Then why don't you do it?"

"You mean you don't want our friends to succeed in torturing a sick world?"

"I don't like pain," she said. "There's something clean, positive and challenging about killing. I'd like to kill. But pain seems so pointless. If you can stop them, go ahead. I'll help you."

He was exhausted and in fever. "Joel won't let me."

"Then — kill him," she said.

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HE knew it was all useless, tired, stale, unrewarding. It was done. He was nothing, and the girl was less. The Pack would succeed and a tortured world would die of a greater famine because he had failed all down the line. And he blamed himself for making a mistake that actually was unimportant. For a moment, he had trusted the girl.

"You *can* kill him." Julie turned back and faced him. "How much do you think those Broadcasters can really control human beings? We aren't fighting wars because we don't want to. We've finally seen what war can do and we're scared. We've retreated. The human race is hiding just like you are now."

Danniels laughed.

She lunged forward, tense. For a moment he thought she had actually stamped her foot. "It's true, you fool! Doesn't the actions of these men prove it to you? They are going to risk destroying the planet. If pacifism really controlled them do you think they could do that?"

He mumbled something about Wolf Pack members.

"There's never been any law or moral credo that human beings couldn't break and justify within themselves some way," Julie intoned carefully. "People can do the same with the induced precepts of the Broadcasters. If you really want to stop them, you can — by killing Joel and going ahead."

"Maybe later," Danniels mumbled. "I'll think about it."

Julie slapped his face. He wondered why he didn't feel it.

"You don't have much time left," Julie whispered. "Don't you know what's wrong with your foot? *Gangrene.* You have to get those toes amputated soon or you'll die."

"Yes," he said numbly. "Must get amputation." But it didn't seem urgent. He felt he should get some rest first.

"It's too bad you can't allow the operation," the girl said sweetly. "You can't allow lives to be destroyed just to save your own personality."

"What lives?" he demanded.

"All the cells and microorganisms in your toes," Julie told him. "You know they'll *die* if you are operated on. Are they any worse than the little bacteria you refused to murder? I suppose it's just as well that you die. How can you stand it on your conscience to breathe all the time and burn up innocent germs in your foul breath?"

Danniels understood. To live was to kill.

Every instant he lived his old cells were dying and new ones being born. So Danniels, who

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thought he could not kill any living thing, finally accepted himself as a killer. It wasn't human life he was taking . . . but it was life.

If he could be wrong about taking any life at all — and he had always believed himself unable to kill anything — he might be wrong about being able to kill men. In spite of everything he had been taught and what he believed about the influence of the Broadcasters.

He studied Joel in the gloom. The man represented everything he loathed — stupidity, brutality, the mob. If I can kill anyone, he told himself, it should be Joel.

He could try. Yes, he could. And that was a victory in itself.

He moved, and that was another triumph over the physical defeat that was already upon him.

Joel looked up, narrow eyes widened, as Danniels came down on him.

DANNIELS caught him in the stomach with the flat of his palm and shoved up.

Joel gargled in the back of his throat and rammed his thumbs for the prisoner's eyes. Danniels nodded and caught the balls of the thumbs on his forehead. He brought his fist up sharply and hit Joel on the point of the chin. His head snapped but righted itself slowly. He lashed into Danniels's body with both eager hands and Danniels, weakened, went down before he had time to think about it.

From the crazy angle of the floor he saw far above him Joel's lips curl back and closer, further down, a shoe was lifted to kick. It was aimed at Danniel's swollen foot.

Danniels smiled. He shouldn't have done that. If he had acted like a man instead of an animal he would have been fine. But now . . . Danniels rolled over quickly against the one leg of Joel's firmly on the floor. Off balance, Joel fell backwards with a curse, the back of his skull ringing against the side of one of the bombs.

Exertion was painting red lines across his vision but Danniels climbed to his knees, put his hands to Joel's corded throat and squeezed.

Yes. He knew he could kill. A few more seconds and he would be dead.

Danniels stopped.

There was no need to kill the boy. He would be unconscious long enough for him to do his job. And he found that fear had left him. He was no longer afraid of killing small things, because he was no longer afraid of killing men.

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He had been able to kill when he had to, but more important, he had been able to keep from killing when it wasn't needed. He didn't need to be afraid of the old blood-lust — because he knew now he could best it.

And Julie had seen. She had seen something she had never believed was possible. That a man could keep from being a savage without the restraints of the Broadcasters or of society.

He limped to the stacked pseudies and sat down. "Now we can make it clean, Julie. We can end the whole mess. Ready?"

"Yes," she told him.

He picked up a pseudie and threw the switch.

THE radio signal went out, and all over the world receivers noted a pseudo explosion in the heart of a Disaster Area. Danniels could imagine the men in the council room in the heart of the city seeing the flash and feeling the doom of a renewed twenty years of isolation and heading for the exact spot of the flash.

More signals flashed. And flashed. And flashed.

And he thought of the people all over the world wondering about the devastating sneak attack on the United States, and the incredible readings of the instruments.

"Keep working," Danniels said. "The Wolf Pack or the officials from the city will be here soon. I hope it's a dead heat. But," he said, "I think we've done it. But we can keep working on the safety margin."

"What have we done, Abe?" Julie asked trustingly.

He was going to feel foolish saying it. "We have just blown up the world according to the official records of the War Games."

"Then they'll have to start over," she said.

"Maybe," Danniels whispered. "If they do, we'll all start even. Everybody's a Jonah. The world is a Disaster Area. Maybe they'll start the War Games over. Or maybe they'll try the real thing again, now that they've seen how easy it is with pseudies."

He felt the numb foot and knew he would have to have an emergency operation if he survived the mobs that were coming. But he had a way of surviving mobs. He looked at Julie. He would see that their children could eat.

"At least," he said, triggering another H-bomb for the world's records, "it isn't a bad day when the world has been given a fresh slate, a new start."

There were footsteps outside, coming closer.

— JIM HARMON

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THE MARTIAN STAR-GAZERS

What killed off the Martian race in 1572? The answer is obvious to anyone who has a brain in his head — or a tongue in his cheek!

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By ERNST MASON *Illustrated by* GAUGHAN

RECENT researches into the surviving documents of the Old Race of Mars have provided insights into the morals and manners of these quaint, extinct creatures who at one time were the only outpost of intelligent life in our Solar System. Three-fingered, cleft of chin, addicted to carrying umbrellas in the early stages of their long history, these Martian humanoids have represented a considerable mystery, both as to their way of life and its abrupt and disastrous end — so recently in time.

Our new studies make it possible to understand many of the questions, including the answer to the greatest question of all: What killed the Martian race in its prime, only some four centuries ago?

As we know, the Martian civilization, unlike that of Earth, arose in its southern hemisphere. This had far-reaching consequences. As on Earth an entire mythology grew around the North Star and its attendant circumpolar constellations, so on Mars, with its clearer air and consequent sharper view of the Milky Way and other nebulosities.

On Mars, of course, it was the South Star that was the "hub" of their heaven—rather, would have been, had there been a "South Star."

Unfortunately, at the Martian South Celestial Pole there is no star of significant magnitude. The pole itself is located roughly midway between the quite unimportant stars *mu* Velae and *iota* Carina, in a tentacled patch of the Milky Way shaped rather like a three-fingered hand with opposed thumb. The pole itself is located near the palm of the hand.

This resemblance to a hand had unfortunate effects on the Martian mythos. It was called, in their dialects, either The Clutch or Ol' Grabby, and it came to be a prime tenet of Martian psychoanthropology that the heavens were out to get them. (See Figure 1.)

The southerly constellation known to us as Crucis (The Southern Cross) lies astride this extension, at about the position of a wrist. In Martian nomenclature this constellation was called The Cuffs; and in their mythology it was regarded as the manacle which kept Ol' Grabby from seizing and destroying their planet.

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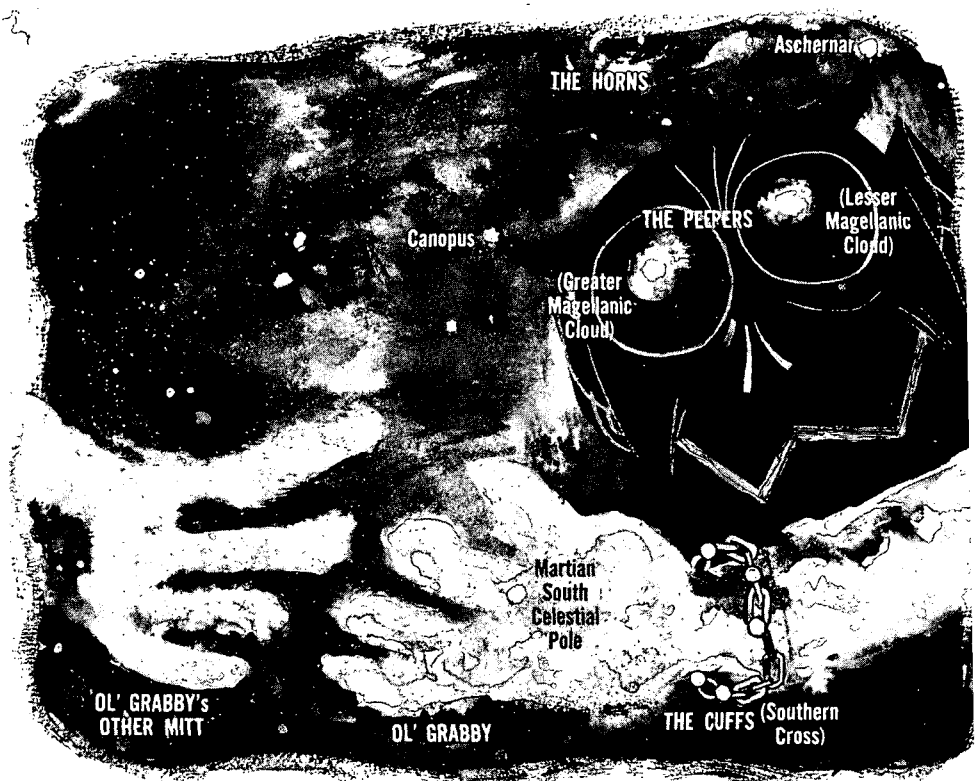

FIGURE 1.

In this view the Greater and Lesser Magellanic Clouds were considered to be Ol' Grabby's eyes, known as The Peepers. And the matching extension of the Milky Way coming from what we know as the constellations of Pyxis, Puppis and Monoceros was called Ol' Grabby's Other Mitt.

The Martians believed that Ol' Grabby's Other Mitt was trying to open The Cuffs and that, if this were done, Ol' Grabby would crush and rend every living Martian and all their works.

The bright southern stars Canopus and Achernar also played a part in this construction. We know that nearly all Martian creatures were hairless and hornless; the

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only exception is a small and venomous beast much feared by the Martians. It was an additional source of dread to the Martians that Canopus and Achernar were considered to be horns of the head of which The Peepers were the eyes.

WITH a night sky composed principally of the features of a demon, it is no wonder that Martian efforts came to be devoted largely to getting out of its sight. This accounts for the markedly subterranean quality of their architecture — explaining why their great cities were never seen by telescopic observation from Earth — and also for the fact that all adult Martians carried umbrellas. This feature of the Martian culture puzzled areologists for many years. (Even in historic times Mars was not noted for its rain.) It is now established that these were carried only out of doors and at night, to conceal the carrier from the hungry gaze of The Peepers.

This in turn accounts, at least in part, for the tremendous expansionist spread of the Martian culture northward at about the beginning of their Second Millenium. "Go north, young Martian!" was a familiar Martian injunction for centuries. (Perhaps an additional consideration was the relative mildness of the seasons in the northern hemisphere of Mars. Its axial tilt is such that the northern hemisphere is tipped away from the Sun at closest approach, toward it at farthest. Mars therefore has a warmer winter and cooler summer in the north.)

When at last the Martian civilization had re-rooted itself in the north it was discovered that a Pole Star did exist for them.

It was not a very bright star, nor is it particularly close to our own Polaris (due to the difference in axial tilt between Mars and Terra.) It is a star about midway between the star Caph in Cassiopeia and the bright star Deneb (which forms one of the points of the famous terrestrial Summer Triangle.)

The Martian North Pole Star is, in fact, what we call *delta* Cephei, the fourth brightest star in the northerly constellation of Cepheus. (See Figure 2.) To the casual observer it is a star of no great interest. But it repays dividends on closer study, even with the naked eye. Delta Cephei is a variable star. It flickers like a candle, waxing and waning quite visibly, at fairly short intervals. It is, in fact, a cepheid variable, and the one after which the whole class of cepheids was named.

A POLE Star is, of course, in a favorable position to become the center of astronomical

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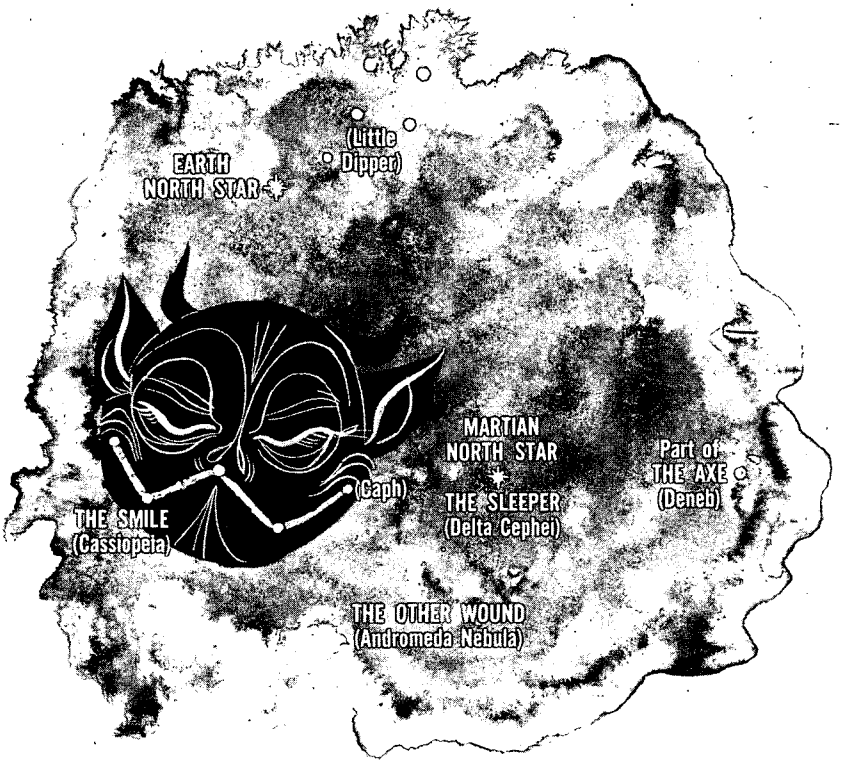
legends, as it is visibly the hub on which the heavens rotate. To the Martians, already uneasy in their cosmological views, it was a source of considerable psychic discomfort to have their northerly heavens swing around a star as unstable as *delta* Cephei. (Our own Polaris, of course, is itself a variable — but a less conspicuous one, partly innately, partly because it has fewer nearby stars to serve as comparisons.) Delta Cephei's regular rise and fall in brightness reminded the Martians of the even breathing of a sleeper; and in their language it was named Sleeper, or sometimes The Drowsy One.

The other northerly constellations were thought to be more friendly, on the whole, than the

FIGURE 2.



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demon-haunted sky of the south. (One major exception is the Andromeda Nebula, which we shall discuss in its place.) The stars we know as Mira Ceti (another famous variable), Fomalhaut and Denebola, along with other stars and the Praesepe Nebula, lying as they did more or less along the plane of the Martian Celestial Equator, were known as The Picket Fence, a heavenly fortification erected to keep Ol' Grabby in his southerly domain. Two of the brightest stars in the Fence (which we know as Betelgeuse and Bellatrix, in the constellation of Orion) were called The Gates. (See Figure 3.)

By a coincidence, the constellation of Orion itself had long been thought to be the outline of a giant — as it is on Earth, Orion being the name of the mighty Heavenly Hunter (whose companions are the Greater and Lesser Dogs: Canis Major, with Sirius, and Canis Minor, with Procyon.) However, the Martians, their culture arising in the southern half of their planet, had at first viewed Orion in the position we would consider upside-down.

In Earthly eyes, The Gates (Betelgeuse and Bellatrix) are considered to be the shoulders of the giant. Saiph and Rigel, to the south, are his feet. The three stars in a row in the center of the constellation are Orion's Belt. And the lesser stars, with the Great Nebula in Orion, which dangle below the Belt are called Orion's Sword.

From the south-oriented Martian view the giant had no feet. Rigel and Saiph became his shoulders. The Belt was still the Belt; but as the projection downward was, from their point of view, a projection upward, the stars in the Sword of Orion were ignored; and the Great Nebula (now falling somewhere on the giant's chest, at about the position of a heart) was called "The Bloody Wound."

The story associated with the constellation was one of danger and tragedy. Ol' Grabby, before being manacled, had lashed out and caught the giant (who was called The Guardian) a deadly blow near the heart. The Guardian was dying. When he died, the northward-moving Martians considered, Ol' Grabby would find The Gates undefended. And then the way would be clear for him to move north after them.

But meanwhile, the Picket Fence stood, and the other northerly constellations were thought to provide valuable secondary defenses.

ON Earth it is easy to see the difference in naming customs between northern and southern constellations. The northern skies,

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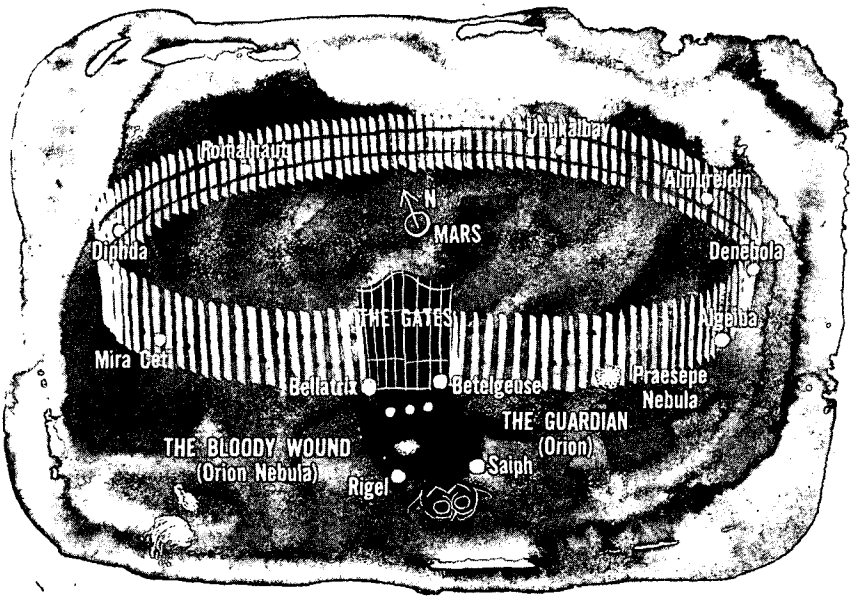

FIGURE 3.

first viewed and first mapped by preastronomical shepherds and nomads, have complicated and devious legends. (As the constellations themselves are complicated and difficult to see — at least when viewed in the light of their supposed resemblances to hares, whales, hunting dogs or swans.) But the southern skies of Earth were named by exploring seafarers. They saw the skies in terms of ships — wherefore such southern terrestrial constellations as The Keel, The Compasses, The Telescope, The Net and so on. (Indeed, the southern sky was at first seen as almost a single constellation — Argo, the Ship — of which most of the presently renamed constellations are the parts.)

An analogous effect occurred on Mars. The northern constellations were named on a larger plan.

Ol' Grabby and his various parts, although they dominated the sky, had been only a few of more than a score of southern constellations for the Martians. But of our Earthly northern constellations (there are more than two dozen of them), the Martians made only a few.

Our Summer Triangle, the

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points of which are the stars Deneb, Altair and Vega, actually takes in five constellations. The Martians considered it one. They called it The Axe, the sharp blade coming to a point at Altair in the south; and it was their weapon to strike at Ol' Grabby in the event that he should somehow break through The Picket Fence at the point in the year's parade of constellations when The Gates and their Guardian were out of the night-time sky.

Such northern nebulosities as The Pleiades, the Hyades and Messier 31, the Great Nebula in Andromeda, gave the Martians pause. Conditioned to think of star clusters, nebulae and the like as somehow inimical — the parts of Ol' Grabby; the deadly Bloody Wound of The Guardian — they could not well assign friendly roles to these astronomical objects. Pleiades and Hyades were considered to be drops of blood shed by The Guardian in his battle, and the legend arose that once Ol' Grabby had broken through The Gates, to the point in the sky marked by these star clusters, and was repulsed only as The Guardian's dying act.

Our Big Dipper (Ursa Major) became for them The Armored Car, a stately and powerful military patrol wheeling through the skies. (As, indeed, in Britain on Earth the same constellation was once called Charles's Wain, or Wagon.) The Little Dipper was a smaller armored car, patrolling backward through the sky, Polaris first.

The triangle formed by Aldebaran, Capella and the twin stars of Castor and Pollux, located near the Guardian's spilled blood, just above The Gates, became The Tank Trap, a fortified line of defense behind which The Guardian could retreat if Ol' Grabby drove him from The Gates. Our constellation of Aries, along with Mirach, Alpheratz and Algenib from other constellations, became The Pit. The Pit lay just above Mira Ceti, the variable star in The Picket Fence; when Mira Ceti waned the Fence was weakened; if then Ol' Grabby broke through, The Pit might trap him and halt his attack.

Most reassuring of all, our Cassiopeia, the wobbly "W" that swings around the Pole Star, swung also around theirs. (Polaris, however, lies above the "W". The Sleeper lies to its right.) The deeply cleft Martian chin gave their closed mouths some of the appearance of a "W" — and they chose to look on Cassiopeia as The Smile.

This was, beyond doubt, a favorable sign. Yet the cryptic Sleeper lay just beside The Smile, and below it the ominous, Ol' Grabby-like fuzziness that we call the

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Great Nebula in Andromeda. The likeness to the Orion Nebula (different as they are in reality, one an external galaxy, the other a mere patch of glowing gas) could not escape notice. Messier 31 was called The Other Wound. The Sleeper smiled in his sleep, yet he too had been hurt. Perhaps he too would be angry if he woke.

WE KNOW that the last surviving Martian perished in a planet-wide death a bare four centuries ago. And we know, finally, why.

The Third, Fourth, Fifth and Sixth Millenia of the Martian planetary civilization proceeded in a cultural stasis like nothing so much as our own Ancient Egypt. Perhaps it was for similar reasons: a hostile, near-desert environment, with seasons strongly marked by the annual flooding of the Nile, the annual melting of the Martian polar icecaps. No doubt, too, social causes were involved beyond this. We do not yet know all of the social factors involved; but we know that the Martian theocracy grew, blossomed — and froze.

Nearly all of Mars now lived in the northern hemisphere. Ol' Grabby was no longer a nightly sight for every Martian. But his worship — more accurately, his propitiation — was the official state religion. And his image, picked out in precious stones, decorated every public building.

Yet in the Martian mind Ol' Grabby must have receded somewhat as a figure of public terror. We know that the custom of carrying umbrellas by night fell into disuse. They are found everywhere in the abandoned southern Martian cities, but hardly exist in the more recent cities of the north. Ol' Grabby was merely the official property of the theocracy. They interpreted his moods; they ordered acts for his appeasement.

So lingered the long afternoon of the Martian civilization, until the year which in our Earthly calendar is called 1572 A. D.

The Sleeper, it should be pointed out, lies itself at the edge of a northerly stream of the Milky Way (whose southerly projections, we recall, were the hands of Ol' Grabby.) An uneasy sort of convention had come to exist that this branch of the Milky Way was indeed a part of Ol' Grabby's body, or perhaps a limb of another Ol' Grabby, but that as long as The Sleeper slept there was no danger.

In 1572 A. D. (our reckoning) The Sleeper awoke. (Fig. 4.)

This was the year of the great nova in Cassiopeia — which appeared to Martians as well as to pre-Elizabethan terrestrials. It was no ordinary nova; was not, indeed, a nova at all. Tycho, who

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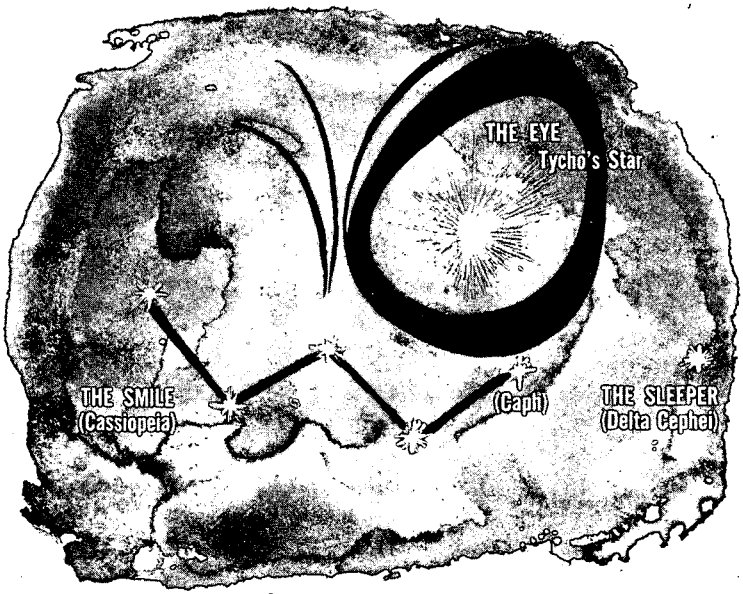

FIGURE 4.

observed it (it is often called Tycho's Star in his honor), was stricken with its enormous brightness, dimming the rest of the sky. It was that rare celestial event, a supernova, the total destruction of a star.

Brightest object in the sky, it mushroomed above the closed mouth of The Smile. It looked like an eye — was an eye — was the Eye of the Sleeper, cried the frantic, panicky mobs that swarmed around the Martian cities. Ol' Grabby — or one like him — had wakened and found them at last; The Sleeper no longer slept. In the terror and riot of those few days of the flaring of Tycho's Star a planet died at its own hands. It was suicide. Nine-tenths of the Martian race killed itself, through fear; and the few remaining could not long survive.

So ends the story of the Martian star-gazers. *Requiescat in pace.* It is a tragic and ironic story, a world destroying itself. How superior we Terrestrials, in our greater wisdom, are well entitled to feel. — ERNST MASON

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Unfortunate castaway! Marooned far from home—
with nothing to share his loneliness but humans!

THE RAG AND BONE MEN

By ALGIS BUDRYS

THE other one—Charpantier, he called himself—he and I were going back up the hill to the Foundation, carrying our bags, when I happened to remark I didn't think the Veld was sane anymore. (I call myself Maurer.)

Charpantier said nothing for a moment. We kept walking, up the gravel path between the unimaginatively clipped hedges. But he was frowning a little, and after a while he said in an absent way: "Now, how would one determine that?" He looked straight into my eyes, which is something that has always upset me, and challenged: "I don't think one could."

I felt the shock of inadequacy. Words come out of me—perfectly accurate words, I know; but I never know how, and sometimes when asked I forget.

Now I must be very lucid; I must be his kind of man, I thought, and picked my way among my words. "These things he's had us get," I said, putting the burlap bag down and stopping so as to hold Charpantier in one place.

"He wants to build something unEarthly," Charpantier said, annoyed because I was playing his kind of trick on him, and so baldly. "What standards do you propose to judge by?"

But I was right and he was wrong. Now it remained to make him see how. "Yes. He wants to

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build something unEarthly. Out of Earthly parts. He wants to take six radio tubes for an Earthly radio, three pieces of Earthly Lucite exactly ¼ Earthly inch thick, a roll of Earthly 16-gauge wire, a General Electric heat lamp, and all these other things — the polystyrene foam blocks, the polyurethane plastic sheeting, the polyvinyl insulating tape; what have you in your bag, Charpantier? Out of all this, he wants to make a Veldish thing."

"He's spent years learning about Earthly things," Charpantier pointed out. "For years, we've brought him books. Men. Everything he needs. Now he's learned what the Earthly equivalents of Veldish materials are, and he's ready to make his new transporter." Charpantier had a dark face —dark hair, dark beard, dark eyes. When his dark brows drew together it was easy to see that his best expression was dark scorn.

"I THINK he's desperate," I said. "I think he's learned all he can. He's learned what the nearest Earthly equivalents to Veldish things are. And he's learned that all Earth can give him nothing closer. I don't see how he could do better. Even he. You cannot make apples of cabbages. But he wants to get home —you know he wants so much to leave here and get home—and now he's desperate, and is going to try making a new transporter out of materials nothing like those in the one that broke and marooned him here."

"And it won't function?" Charpantier asked. "There is that risk. But why shouldn't he try? What's insane in that?"

"I fear it might work. I fear it might work in ways a transporter should not." And I shivered, for if I say something I feel it, and I do not feel anything I don't believe is right. I have been wrong, but not often . . . or perhaps I forget.

Charpantier smiled. "How should a Veld transporter work?"

"That's not the point!" I cried at Charpantier's obstinacy in being Charpantier. "I don't have to know. The Veld has to know, and be insane enough to try something different. Look—" I said, searching, being my own kind of man, now, and letting the words come straight from the images in my head. "Assume a man. Assume a man stranded on an island, for years. Assume he has ways of realizing his heart's desire, if only he can find the things to work with. But it's a small island. And while it's a good island how can it give a marooned man not only comfort but heart's desire? He searches. He perhaps send messengers, if he himself cannot penetrate the jungle; such messengers

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as he can command. And, in the end, after years, he knows he cannot have exactly what he wants. But he can have something very near it. So, in the end, he takes a rag, and a bone, and a hank of hair—"

"And makes a woman?" Charpantier laughed. "If he fails, what of it?"

"But if he succeeds, Charpantier! If he *succeeds!*" Couldn't he see? "What sort of woman?"

Charpantier looked at me for a moment, but I hadn't made him see. He saw only me, and I had taken up his time without delivering value. So he chastised me.

"The Veld made me and you. Are you dissatisfied?"

He had that trick, Charpantier. If you tried to give him a problem he couldn't solve, he gave you a greater problem of your own, to add to the one you already carried.

I picked up my bag and followed him up the hill to the Foundation, where the Veld timelessly waited.

It was dusk, and as I walked I turned my eyes up to the stars. One eye was larger than the other, and a different color. My nose sat askew on my lumpen face. Though Charpantier was a hunchback, and lacked a finger, still he was a handsome hunchback. But I, whom the Veld had made second, with Charpantier's example, was merely whole. And from my eyes, tears.

WE entered the Foundation. It had been erected around the Veld, when he first came and there were men who could question.

Now the building was neat and kept up, but all its many rooms were empty, and all its many machines were still. Charpantier had his cottage on the West—a very learned man had used it, while working with the Veld—and I had mine on the East, where a military commander had kept his family.

The Veld lived in the heart of the Foundation, in the odd-shaped room whose walls traced the configuration he had been forced to assume when his broken transporter had interrupted his journey between—where?—and the home he pined for. Men came from the town below the hill to care for the building, but Charpantier or I had to go fetch them. They no longer questioned. They distressed us with their constant need for commanding, and so every time they were finished with their work we commanded them homeward. No Earthly creature lived on the hill.

The Veld was kindly, but an end comes to kindness. The time came when the questioning of men would have led them, if an-

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swered, irrevocably into Veldish ways.

It was perhaps a kindness, too, that the Veld did what he did to questioning creatures. But however it may have been, now there were only men to be commanded. Charpantier commanded in the West, and I in the East, and the Veld, though he permitted us to question all men, and each other, commanded us.

Charpantier and I did not often speak to each other while in the Foundation. We were too near the Veld, and insufficiently full of ourselves. But as we rode down the elevator, with its noise of metal sliding all alone in the world, Charpantier looked at me. And I knew what he looked.

I have thought to myself that Charpantier says of everything: "Why is this thing not perfect?" while I say to myself: "Where is the perfection in this thing?" Surely my thought is as potent as his. But you see his advantage over me, for he was forever safe from what I might look at him, but I, I was not safe.

We reached the chamber of the Veld. We opened the door and displayed our accumulation to his perceptions.

"My-being reflects you," the Veld told us from his perception, and seeing that he was become beautiful, I knew we had done well. "Now will I make, and take my way, and you in your sorrow stay to see the world restored."

This was as he had promised the world, and us, before he put an end to questioning. Though only we remembered. But I wondered—I did not question; I wondered—as I imagined his making of the new transporter, taking my imagined thing from what I knew of how he had made us; I wondered whether the world was safe.

I thought of the chamber beside this one, where we had been born. I had often been there, only to look. There is the tank—the Rochester, Minnesota, Biophysical Equipment Co. tank. And there is the Velikaya Socialisticheskaya Rossiya coagulator, and the IBM 704, and the Braun, Boveri heater. There stand the cabinets, with their Torsen, Held Artztmetal refrigeration units. And the cabinets stand full of flasks and ampules, and there is the autoclave full of Becton-Dickinson Yale syringes, and dangling from the wall are the Waldos the Veld used to manipulate all these things.

And of all these Earthly things, the Veld made men not entirely Earthly, for the Veld is a Veld.

Now soon, the new transporter would take the Veld away—in ways I wondered were perilous—and it would be Charpantier and I who stayed to see the world restored.

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Charpantier and I, who called ourselves, but had no names.

He commanded us to go and we went, I East, Charpantier West. I saw Charpantier hurry down his side of the hill, handsome and hasty under the stars. I walked—for me, to run is to risk—and I trembled, for me to feel is to know, and the Veld was desperate. He slept at night, secure from questions even though he slept, for his power once exercised was irrevocable so long as he existed. But tonight he did not sleep; he made.

I thought of my assumed man, on his assumed island, red-eyed and tremulous of hand, bent over his pot, stirring, stirring, unable to wait for morning. I thought of the light from his fire, shining on the dumb eyes of his faithful messengers waiting at the edge of his clearing. The messengers are dismissed from service, yet not quite sure they are dismissed. And I thought of this Earth, and the Veld's old promise to us that tomorrow it would wake knuckling its eyes, and need a loving voice to say there was an end to nightmares.

I would speak and Charpantier would speak, but what would we say? And in what voices, born of the Veld's touch on the Waldos? And would there be more than speaking to do?

I did not think there was much I could do but speak. Charpantier lacks a finger, but I . . . I have hands, but I lack them.

Oh, but the stars were cold! The Moon in this season was a day Moon, and now below the horizon. Stars, stars and galaxies, but beyond them, where the Veldish beings lived, nothing I could see, and below the stars, too, here where I reached the brow of the hill and clumsily opened my wings, here, too, nothing, as I lurched into the night and in great strain beat toward the places of men.

I had a favorite place; the place I had chosen to begin to speak from. It was small, as men measure things—a few lights in the darkness, here the sheen of a lake, there the tiered wooliness of trees—a town in which I had disposed those men who must first unbind themselves from the years of no questioning. For unlike the Veld and his transporter—and even the Veld needed a transporter—Charpantier and I could not be everywhere.

It was my thought to reassure these men first, and have them go out and reassure others, as older brothers will soothe the younger in the night. I knew from an old argument that Charpantier planned the same. But, of course, they would not be the same sort of men for Charpantier as for me.

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Still, they were all men. Once they had all rubbed the sleep from their eyes they would tell each other what they saw, and in the end and all men would have agreed on the shape of the world, so it would not matter what imperfections Charpantier pointed out, or what implicit glories I percieved.

If the Veld's hand did not tremble as he stirred his pot.

And yet it had—it had; Charpantier had said more than he thought, when he thought to stop up my mouth with myself.

I faced away from the Foundation, now mile on mile behind me. But my eyes turned inward, and in me my mind hovered over the Veld. I had no actual distant eye —no way of seeing beyond the curve of the world or through the haze of the air; no ear to listen to a sound so far away it cannot urge the molecules of air my pinions grope at. But often it is well enough to think, for any thought seems accurate enough to act on, and in time thoughts grow so practiced that they might well be eyes. And so I saw the Veld, though I did not see him, and I saw him falter.

In me, the Veld suddenly told: "I have made, and I go. Forgive me for your sorrow." And I forgave him, as I had forgiven him long ago. For his duty was to men, not to ourselves who were part of that duty. And Charpantier, I knew, had nothing to forgive, for he was glad of his sorrow.

The wind numbed my eyes. I wept.

Under the cold stars, my crude cheeks glistened. I hovered over the town, where some men slept and some men worked, because some machines run during the day and some run at night, and I listened for anything else the Veld might have to tell, for he was my irrevocable commander as long as he existed on this Earth. I also listened with the ear of habituated thought.

And I heard. In my mind's eye, I saw the Veld use the Earthly transporter, but it was not with my mind's ear alone that I heard what I heard.

The pot erupts. The stranded man claws back in agony so great he cannot even scream, arms, legs and face smoldering, and jounces on the ground, to lie, to moan, to be a long mindless time dying. And at the clearing's edge the little messengers have no one to say what could be done to soothe him.

What now? Where to go, what to do, how to repair?

Oh, Veld, Veld, long-living Veld, what truly eternal sorrow!

I sank down through the air, bereft and graceless. What could I do for the Veld? All that remained to me was what I could say to

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men. But I knew as I landed among them that the Veld's promise could not be kept, since the Veld was still here.

I cried out to the men: "Awake! Arise!" They stumbled out of their houses, but when I said to the first of them: "Question me!" he obediently answered: "How?"

•

I GO back to where the Foundation was, now and then. I bring doctors with me, after each time it seems to me I have found a way to tell them what to seek. The Veld lies where his chamber was, before the stone decayed, and tells me nothing.

If he truly reflects me, as he is now, then I don't know if I can bear to wait for the day when I can dash myself down from the outraged air and surrender myself to the sea-speckled rocks. The doctors say that if only someone would tell them what questions to ask about the Veld, and if only someone would give them the answers to the questions, they might be able to do something.

Charpantier is there sometimes, and mocks me. "You're getting crazier every day, Maurer," he says. "Suppose you restore the Veld? Then what? Does he make another transporter?" He shakes his head. "Poor Maurer. What're you doing to these people you bring here? What do you want from them? Something the Veld himself couldn't accomplish?"

I try. I try to tell them how to question, and I command them to question. And I hope the Veld dies. But though Charpantier and I—even Charpantier and I—are growing a little older, the Veld is only moribund, and no more dead than he was before the days when thirty generations of men battled to keep the southernmost edge of the creeping ice from burying the Veld beyond the reach of hope.

For I hope—though I can see a sprig of silver, here and there, in Charpantier's darkness now. The Veld must be accessible to my hope, though I must command millions of men.

And I think Charpantier hopes, too, because so long as he can see me failing he knows I am imperfect, but he wishes perfection for me. I know he brings no doctors only because he has not yet found a way for a man to respond to the command, "Be perfect!"

Each time the hope dies, I tell my men: "Go home, now. Rest." And they go home. But I? I blunder about, thinking that perhaps if I could kill the Veld, that would be an end to it. But nothing can kill the Veld, unless it be something the Veld knows of. So first we must heal the Veld. And healed he will once again seek his heart's desire, hopelessly. As do I. As do I.

— ALGIS BUDRYS

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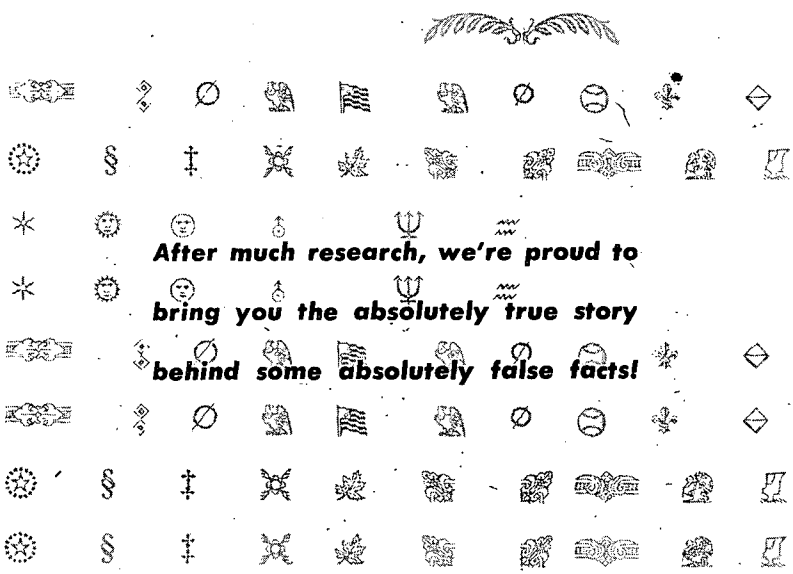
ORIGINS OF GALACTIC FRUIT SALAD

By EDWARD WELLEN



MILES of glorious braid lead back to 3030 U.E., when the Galactic Council charged the Galactic Corps with the mission of lessening aggression on planets in advance of overt contact by the Diplomatic Service. It is with deepest reverence that one taps the archives of the Awards and Decorations Board of the Galactic Corps. In them one finds the notable recipients of the various medals that came into being with that directive.

Distinguished Conduct Comet. Cast in gold and radium: obverse comet approaching perihelion, reverse comet receding.

Orbiting Porrima V, Warrant Officer Uvru Vroghlu found tribal battle impending between the Luaw and the Jhaly. Projection showed the invading Luaw would win, giving a warlike cast to the

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planet's future culture. In full view of the Jhaly, the Luaw warlock prepared to foretell victory. He set out hatchetberry drupes in simulated battle formation, unpatriotically arranging the juicier to represent the Jhaly, then confidently bent his neck to his chief's blade. Birds cuneiformed out of sky. Their cropping would indicate the casualties.

Displaying amazing accuracy, W. O. Vroghlu played his vibro-gun over the drupes and caused the birds to be eerily selective. They could make off with only the drupes representing the two chiefs. The Luaw chief regained his equilibrium and easily convinced the Jhaly chief the Luaw had come on a peaceful trading expedition.

Distinguished Service Pin. Plastic, shot through with silicon and titanium.

On Izar II, through the ages, contesting armies had trampled what had once been rank borderland to dust. Neither side wanted it any more; still it knew unhappy disposition of troops, the armies of Edeen and Emeeq facing each other across desolation, both longing to about-face, neither willing to pull back with the other in view.

A heat wave was due. Tempers would fray. The orbiting observer, Spaceman First Class Roby Ludnurk, took a calculated risk to avert the fray. He deliberately induced a highly localized heat wave. Demonstrating unusual skill in fire control, Sfc Ludnurk drew both vibro-guns and heated a thin layer of air above the ground each army stood, reflecting light rays upward.

Each army, recovering from a long moment of dazzle, saw ahead only glassy shimmering as though the other had flooded the land to deny it to the enemy. Each about-faced and marched home.

General Service Arrow. Shaft, longbow, made of branch (olive) and feather (dove.)

Chief Petty Officer Sadhm Lyddvo, observing T'ien-Kuan II, found two powers, Xebban and Kroona, anxious for their latest quarrel to come to a head. They were waiting for the people of the other great power of the planet, Vozzyl, to rebuild. It had always been their practice that two warring powers took turns clobbering a third party, the winner being the one inflicting the heavier damage. But the Vozzyn, weary of war, were dragging their feet.

Xebban and Kroona besieged Vozzyl with reconstruction funds. The Vozzyn weakened. They pocketed much of the largesse, but ultimately began to rebuild. Exhibiting unsual initiative, C.P.O. Lyddvo plied his vibro-

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gun to shiver their timbers, destroying by night what the Vozzyn built by day. Xebban and Kroona sent Vozzyl bluff notes threatening war unless Vozzyl stopped sabotaging the war effort — Xebban naming the neighboring land of Unzarg as the proving ground in its quarrel with Vozzyl and Kroona nominating Bughyn. The Vozzyn, unable to stop, bravely took up both challenges.

But Xebban and Kroona were only bluffing. Through his intelligent dissipation of their grants, C.P.O. Lyddvo had deflated their war chests.

Psychwar Award. Protactinium, shielded; obverse Freud couchant, reverse Sphinx dormant, nose riddled.

At the time of the Coal Sack Emergency the Galactic Corps had recalled psychosemanticist Ira Kroh to active duty for the duration. At G.H.Q. a buck slip fluttered out the window in the paper blizzard attending the victory parade. The slip chanced to be his orders. Therefore Ensign Kroh remained manning a POW-less interrogation depot on an asteroid in the region of Sagittarius.

He kept up his morale by giving himself orientation lectures and by maintaining alertness and discipline. After uneventful years he spotted symptoms of war pathology on Rukbat III. His scout ship sat only meters away. But he had confined himself to quarters. He opened sealed orders for such an exigency and read: "Do your best."

He policed up a paper blizzard and sentenced himself to additional confinement. By tampering with the gravistat that maintained comfortable artificial gravity, he wrenched the asteroid, losing the ship in the process, and headed quarters and all toward Rukbat III. There the war had ended. Dictator Sedauh, having won this plum, in savoring it forgot he had been eager to throw down the gage to other lands. But a portent — the sudden appearance of a heavenly body — reawakened him to his dream of glory. While Ens. Kroh fretted in the firmament at the necessarily slow deceleration approach, Sedauh's army headed north-northwest, to erupt through unguarded badlands.

Kroh anticipated their line of march. With cool disregard of personal safety, he set the asteroid down. The vanguard of the invading army came upon a building on a hill, stormed it, and Sedauh entered Ens. Kroh's quarters.

Ens. Kroh explained that this was a sanitarium. By nightfall, the portent having vanished from the firmament, Ens. Kroh had

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convinced Sedauh that he, Sedauh, was a paranoiac who only thought he was the great Sedauh. Sedauh disbanded his imaginary army and committed himself.

When Ens. Kroh had packed in his own time, he stepped outside and sent up a space flare . . . only to run into charges of desertion. The oversight caused by the loss of his orders had righted itself and his relief had come — to find the post missing. But that too righted itself in time, and Ens. Kroh received this award posthumously.

Vermilion Ilion. Cast in yttrium and sodium; Troy, towers of, topless, with Horse, wooden, at gates of.

With only a gravi-ray ring, Corporal Sally Sims landed on Alpheratz VII and, posing as a trader, made her way along the Yilla River to the city of Udt. Forces from Vhyudt would soon besiege Udt and Cpl. Sims had to bring about a stalemate. Using her gravi-ray to tip the scales she amassed enough to purchase a tavern for cover.

The NO TRUST sign over the bar was sinisterly appropriate. By now Vhyudt had invested Udt and every friend might be foe. Aid from Dulk, an ally of Udt, seemed a forlorn hope. Despite taunts from Udt women, who were unconscious fifth columnists, the besiegers let attrition and rumor do their work. Then one night provisioners from Dulk poled up the Yilla. They clung to the walls of Udt and clamored quietly for the water gate to open before Vhyudt soldiers upstream in ambush, expecting relief to drift down into crossfire, got wind and arrived. Udt wakened. The fifth column blocked off the water gate mechanism, the sixth column attacked the fifth, the seventh tore the great cannon from its embrasure and rounded it on the sixth. Cpl. Sims sprang into action.

She locked her cash box and called Nitam, her tapster, to follow her to join the eighth column. She had used her wiles to win Nitam's loyalty against the moment of need. Loud clamoring spurred the eighth on to win. Cpl. Sims and the other survivors drew fallen out of the way to round the cannon on the gate and so finesse the fifth. But Nitnam, unmasking himself as a ninth columnist, leaped to the breech. Cpl. Sims advanced alone, trusting to Nitam's love. A near miss; Nitam quickly reloaded. Cpl. Sims with a prayerful gesture set her gravi-ray to give extreme weight to the shell. Nitam fired. The shell remained in place an instant, then dropped; the gun itself shot backward and breached the water gate. The relief party poured in.

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Order of Persistence. Plastic; teeth, set.

Major Wrejy Nulzo, observing Sirius I, dog-eared his telemach of Bull Run and broke out his weapons. A peace mission from Jodlu was nearing the bridge to Pujra.

On the Pujra side the jingoist C.O. of the border watchtower planned to blow up the bridge in the teeth of the peace mission. Once the Jodlu envoys crossed safely the danger would pass, for a Pujra escort waited to whisk them to the capital to finalize an immediate mutual pullback.

Maj. Nulzo tried to lift away the powder charge under the bridge or shake loose the wiring. But he had failed to keep his gravi-ray and vibro-gun in working order — or else they were lemons to begin with. Undaunted, Maj. Nulzo landed his scout craft in woods nearby. He stripped and crept toward the stream. Before he could plunge in to disarm the charge a Pujran sentry halted him with a shout.

To Maj. Nulzo's horror the sentry patted his flank. The Pujran had taken him for an ovbuk, an animal that made a fine mascot, and was sentimentally protecting him from the charge, rather than vice versa. Pujran troops to a man were nearsighted, as befitted a tradition of coming to grips with the foe.

Balked, Maj. Nulzo padded into the watchtower in time to hear the C.O. give the order to detonate. A yeoman poised a finger over a button while the order passed down the chain of command. Maj. Nulzo slowed the order by distracting the officers with moist friendliness, but the order came down inexorably. It reached the yeoman's immediate superior. The envoys were on the bridge. Maj. Nulzo, resolute in this extremity, bit the yeoman's finger.

Nursing it, the yeoman looked helplessly from his other digits to the button, while the mission crossed safely.

Brevet Ribbon. Sodium bicarbonate spectrum.

Mess Sergeant Vhedj Tvekvi, hopping his field kitchen from outpost to outpost, was the nearest corpsman when the Botein II emergency came up; the Sector Computor called on him.

Though he had none of the conventional weapons at his disposal Sgt. Tvekvi touched kepi and changed course. Fields fattened and bins bulged in Potmu but the populace was not content. The gnashing of irredentists was heard in the land. Potmu expansionists demanded collops out of neighboring lands under the pretext of errors of marking: some faulty registration of map colors

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blurred the borders. The government set up conscription. The conscripts accepted their lot; theirs but to bow and obey. They were even now on menacing maneuvers.

Sgt. Tvekvi digested all this and drew up a plan of rumble. He passed up meals till hunger pangs had grown severe, then opened a ration-pak. He sniffed ravenously. He set it aside. The pangs grew almost unbearable. Making do with regulation mess equipment he tapped his veins, isolated the hunger hormone from his blood, and placed it in a protein reproducer.

Even as it was synthesizing in quantity, the expansionist leaders were issuing marching orders. The troops bowed snappily. Then, while the leaders looked on much moved, the men made for a thorny thicket through which a trail twisted toward neighboring Vatnobg.

Sgt. Tvekvi hurriedly injected hormone into aerosol cans. Hovering unseen, thanks to a spatter of food colors with which he camouflaged his craft, he sent down a mist that clung to the barbed growth. When the column was well in he tossed an economy-size package of self-hydrating greens to obliterate the trail.

Lost, the troops tore out of the inoculating thicket, and found themselves embarking on a mad foraging over the fields of Potmu. By the time the leaders caught up with them the troops, looking a ragged but gluttonous rabble, had gorged themselves too obese to do obeisance. This insubordination proved as demoralizing to the leaders as to the conscripts themselves. The expansionist government forgot the *casus belli* and fell in its haste to demobilize.

Meanwhile Sgt. Tvekvi had dutifully stuffed himself against having to inoculate the troops with his satiation hormone. He feared they would strip the fields and empty the bins, then turn again toward Vatnobg. But the hunger hormone had spent its force and they returned home peaceably.

Refraining-from-Action Medal. Cast in calcium and lithium; palm, preventive.

Petty Officer Dexter Murrey put in for transfer to straight duty but drew Aspidiske V — notoriously pacific. Languishing in his vigil, he glowed to see Epshs-men in armor descend upon Alodzngryv. He prepared to distinguish himself, then found those of Epshs were merely trooping in for annual servicing of their ceremonial armor, which the armorers of Alodzngryv took care would not articulate a blow. He went back to his vigil.

After a time he glowed to see

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armies assemble in Gilev and in Mirj, receive an issue of blades and march head on. He prepared to distinguish himself . . . then watched each force simply prune its side of the boundary hedge. He went back to his vigil.

When his tour of duty was nearly up he glowed to hear alarums of war — and in the most lethargic area of Aspidiske V, along the Fblaex-Laxehfha border. There was no trespass as yet. Constant watch had begun, however, with a frenzy of build-up. But he saw with misgivings the two chiefs of state secretly rendezvous. He listened in — and knew joy.

They were planning not to ease tension but to further it. Here was his chance to punish dishonor and distinguish himself. His finger moved to a trigger, but he chose to savor the moment. And he heard them in breaking up the parley remind each other of their aim and of the need to stand fast.

In both Fblaex and Laxehfha much had long wanted doing, but sense of urgency had faded and gathered smell of must. Now their economies were rolling along on bogies of war. E.g., under guise of bringing up fill for potential crump holes they were building roads their forerunners had planned but never begun for lack of funds. P. O. Murrey went back to his vigil.

Meritorious Service Ribbon. Mica, with embeddings of beryllium and lithium constellating a milky whey.

W.O. (jg.) Hazzut saw war threaten all Acrux XX because one Uvjjvikj, wishing to get rid safely of one Sarado, his rival in love, planned to trick their nation into war and send Sarado to the most dangerous front. Having charge of the government computer, Uvjjvikj set it to misinterpreting findings (so that preventive war seemed in the cards) and to foretelling the most dangerous front (so that it might cut orders sending Sarado there.) W.O. Hazzut, demonstrating superb remotemanship, beamed his gravi-ray to weight the statistics Uvjjvikj fed into the crude computer Acrux XX was conversant with. This created a lag, enabling W.O. Hazzut's own advanced model to advise him how best to joggle the bits of information with his vibro-gun. Uvjjvikj, finding that whatever action Sarado might figure in he was bound to reap not death but glory, had his computer predict the country would lose the war, and recommend preventing its start.

— EDWARD WELLEN

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Have you found out about the Big Engine? It's all around us, you know — can't you hear it even now?

By FRITZ LEIBER

THE BIG engine

THERE are all sorts of screwy theories (the Professor said) of what makes the wheels of the world go round. There's a boy in Chicago who thinks we're all of us just the thoughts of a green cat; when the green cat dies we'll all puff to nothing like smoke. There's a man in the west who thinks all women are witches and run the world by conjure magic. There's a man in the east who believes all rich people belong to a secret society that's a lot tighter and tougher than the Mafia and that has a monopoly of power-secrets and pleasure-secrets other people don't dream exist.

Me, I think the wheels of the world just go. I decided that forty years ago and I've never since seen or heard or read anything to make me change my mind.

I was a stoker on a lake boat then (the Professor continued, delicately sipping smoke from his long thin cigarette). I was as stupid as they make them, but I liked to think. Whenever I'd get a chance I'd go to one of the big libraries and make them get me all sorts of books. That was how guys started calling me the Professor. I'd get books on philosophy, metaphysics, science, even religion. I'd read them and try to figure out the world. What was it all about, anyway? Why was I here? What was the point in the whole business of getting born and

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working and dying? What was the use of it? Why'd it have to go on and on?

And why'd it have to be so complicated?

Why all the building and tearing down? Why'd there have to be cities, with crowded streets and horse cars and cable cars and electric cars and big open-work steel boxes built to the sky to be hung with stone and wood — my closest friend got killed falling off one of those steel boxkites. Shouldn't there be some simpler way of doing it all? Why did things have to be so mixed up that a man like myself couldn't have a single clear decent thought?

More than that, why weren't people a real part of the world? Why didn't they show more honest-to-God response? When you slept with a woman, why was it something you had and she didn't? Why, when you went to a prize fight, were the bruisers only so much meat, and the crowd a lot of little screaming popinjays? Why was a war nothing but blather and blowup and bother? Why'd everybody have to go through their whole lives so dead, doing everything so methodical and prissy like a Sunday School picnic or an orphan's parade?

AND then, when I was reading one of the science books, it came to me. The answer was all there, printed out plain to see, only nobody saw it. It was just this: Nobody was really alive.

Back of other people's foreheads there weren't any real thoughts or minds, or love or fear, to explain things. The whole universe—stars and men and dirt and worms and atoms, the whole shooting match—was just one great big engine. It didn't take mind or life or anything else to run the engine. It just ran.

Now one thing about science. It doesn't lie. Those men who wrote those science books that showed me the answer, they had no more minds than anybody else. Just darkness in their brains, but because they were machines built to use science, they couldn't help but get the right answers. They were like the electric brains they've got now, but hadn't then, that give out the right answer when you feed in the question. I'd like to feed in the question, "What's Life?" to one of those machines and see what came out. Just figures, I suppose. I read somewhere that if a billion monkeys had typewriters and kept pecking away at them they'd eventually turn out all the Encyclopedia Brittanica in trillions and trillions of years. Well, they've done it all right, and in jig time.

They're doing it now.

A lot of philosophy and psychology books I worked through

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really fit in beautifully. There was Watson's *Behaviorism* telling how we needn't even assume that people are conscious to explain their actions. There was Leibnitz's *Monadology*, with its theory that we're all of us lonely atoms that are completely out of touch and don't effect each other in the slightest, but only seem to . . . because all our little clockwork motors were started at the same time in pre-established harmony. We *seem* to be responding to each other, but actually we're just a bunch of wooden-minded puppets. Jerk one puppet up into the flies and the others go on acting as if exactly nothing at all had happened.

So there it was all laid out for me (the Professor went on, carefully pinching out the end of his cigarette). That was why there was no honest-to-God response in people. They were machines.

The fighters were machines made for fighting. The people that watched them were machines for stamping and screaming and swearing. The bankers had banking cogs in their bellies, the crooks had crooked cams. A woman was just a loving machine, all nicely adjusted to give you a good time (sometimes!) but the farthest star was nearer to you than the mind behind that mouth you kissed.

See what I mean? People just machines, set to do a certain job and then quietly rust away. If you kept on being the machine you were supposed to be, well and good. Then your actions fitted with other people's. But if you didn't, if you started doing something else, then the others didn't respond. They just went on doing what was called for.

It wouldn't matter what you did, they'd just go on making the motions they were set to make. They might be set to make love, and you might decide you wanted to fight. They'd go on making love while you fought them. Or it might happen the other way—seems to, more often!

Or somebody might be talking about Edison. And you'd happen to say something about Ingersoll. But he'd just go on talking about Edison.

You were all alone.

EXCEPT for a few others—not more than one in a hundred thousand, I guess—who wake up and figure things out. And they mostly go crazy and run themselves to death, or else turn mean. Mostly they turn mean. They get a cheap little kick out of pushing things around that can't push back. All over the world you find them—little gangs of three or four, half a dozen—who've waked up, but just to their cheap kicks. Maybe it's a couple of coppers in 'Frisco, a schoolteacher in K.C.,

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some artists in New York, some rich kids in Florida, some undertakers in London—who've found that all the people walking around are just dead folk and to be treated no decenter, who see how bad things are and get their fun out of making it a little worse. Just a mean *little* bit worse. They don't dare to destroy in a big way, because they know the machine feeds them and tends them, and because they're always scared they'd be noticed by gangs like themselves and wiped out. They haven't the guts to really wreck the whole shebang. But they get a kick out of scribbling their dirty pictures on it, out of meddling and messing with it.

I've seen some of their fun, as they call it, sometimes hidden away, sometimes in the open streets.

You've seen a clerk dressing a figure in a store window? Well, suppose he slapped its face. Suppose a kid stuck pins in a calico pussy-cat, or threw pepper in the eyes of a doll.

No decent live man would have anything to do with nickel sadism or dime paranoia like that. He'd either go back to his place in the machine and act out the part set for him, or else he'd hide away like me and live as quiet as he could, not stirring things up. Like a mouse in a dynamo or an ant in an atomics plant.

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(The Professor went to the window and opened it, letting the sour old smoke out and the noises of the city in.)

LISTEN (he said), listen to the great mechanical symphony, the big black combo. The airplanes are the double bass. Have you noticed how you can always hear one nowadays? When one walks out of the sky another walks in.

Presses and pumps round out the bass section. Listen to them rumble and thump! Tonight they've got an old steam locomotive helping. Maybe they're giving a benefit show for the old duffer.

Cars and traffic—they're the strings. Mostly cellos and violas. They purr and wail and whine and keep trying to get out of their section.

Brasses? To me the steel-on-steel of streetcars and El trains always sounds like trumpets and cornets. Strident, metallic, fiery cold.

Hear that siren way off? It's a clarinet. The ship horns are tubas, the diesel horn's an oboe. And that lovely dreadful french horn is an electric saw cutting down the last tree.

But what a percussion section they've got! The big stuff, like streetcar bells jangling, is easy to catch, but you have to really listen to get the subtleties—the buzz of a defective neon sign, the click of a stoplight changing.

Sometimes you do get human voices, I'll admit, but they're not like they are in Beethoven's *Ninth* or Holst's *Planets*.

There's the real sound of the universe (the Professor concluded, shutting the window). That's your heavenly choir. That's the music of the spheres the old alchemists kept listening for—if they'd just stayed around a little longer they'd all have been deafened by it. Oh, to think that Schopenhauer was bothered by the crack of carters' whips!

And now it's time for this mouse to tuck himself in his nest in the dynamo. Good night, gentlemen!

— FRITZ LEIBER

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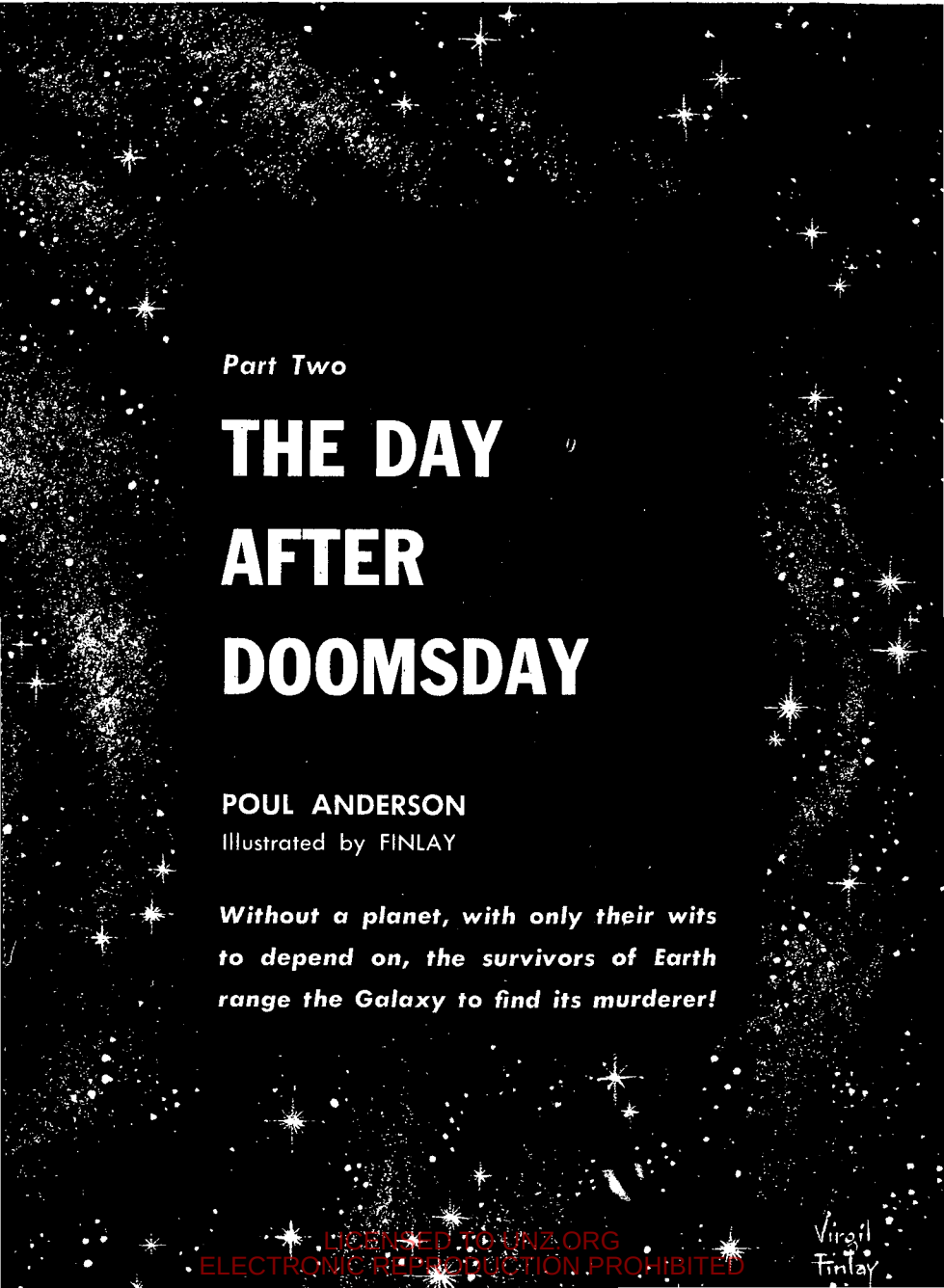

Part Two

THE DAY AFTER DOOMSDAY

POUL ANDERSON
Illustrated by FINLAY

Without a planet, with only their wits to depend on, the survivors of Earth range the Galaxy to find its murderer!

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Virgil Finlay

Who were the murderers of Earth?

Just months before, Earth had been blossoming in the first thrilling leap into interstellar space—a booming, bustling planet of billions of people, with scientific progress that even the galactic visitors had admired. Earth itself had not discovered the secret of faster-than-light travel; but it had been quick to learn. Already half a dozen expeditions on Earth-built ships had plumbed the Galaxy.

Now one of them returned to find Earth a corpse.

The ship that first came back was the **Benjamin Franklin,** equipped for every emergency but this. It held weapons, food, medicine, books, instruments, wealth — it held everything except the one thing that no one had imagined it would need.

In all its crew — perhaps the only humans left alive in the Galaxy — there was not one woman.

In the eighty billion star systems of the Galaxy there were countless thousands of races — friendly merchants like the Monwaingi, warriors like the Kandemirians, pastoral peoples, emotionless semi-robots. Which of them had blasted Earth and left it a blazing ruin, guarded by orbiting missiles to destroy even the ships that returned?

The men of the **Benjamin Franklin** began the hunt for the murderers. In desperation they allied themselves with the Vorlakka, a fighting race who might themselves have been Earth's assassins. (But what race might not?) With an Earth-born variation on a galactic weapon they joined a raid on the planet of the Kandemirians. Their plan was simple. To find the murderers, they must get allies. To get allies, they must take sides; the side they helped in a successful battle would then help them. . .

But their side lost.

All the men of the **Franklin** were captured by the Kandemirians. If they had been desperate before, they were nearly hopeless now. Their own lives were forfeit if they did not help their captors. And their race, with no women to produce new generations, was doomed.

Earth was on its way to becoming no longer even a memory. . .

But there was another ship.

Its name was the **Europa,** off on a cruise of its own, returned like the **Franklin** to find Earth a cinder. Like the **Franklin** it had escaped the satellite missiles and was now gypsying through the Galaxy.

Their plans were different. It was not revenge they sought but something else. The **Europa's** crew set itself down on the planet called Zatlokopa and began to turn their human talents to good use. They were earning money. The needed money, lots of it, in order to finance the hunt for other Earth ships and for the Earthmen they prayed might somewhere be wandering in the starlanes.

For the **Europa's** crew was made up entirely of women.

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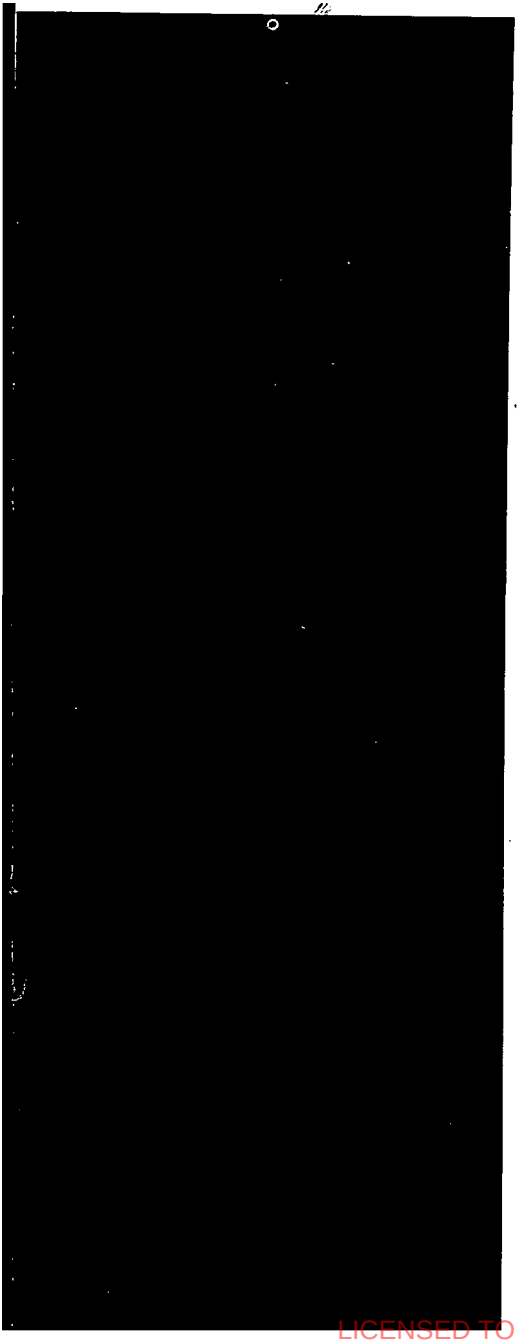

PART TWO

VIII

Mit shout and crash and saber flash,
And vild husaren shout
De Dootchmen boorst de keller in,
Und rolled de lager out;
Und in the coorlin' powder shmoke,
Vhile shtill de pullets sung,
Dere shtood der Breitmann, axe in hand,
A knockin' out de boong.
Gling, glang, gloria!
Victoria! Encoria!
De shpicket beats de boong.
—Leland

FROM their window high in that tower known as i-Chula —the Clouded—Sigrid Holmen and Alexandra Vukovic could easily see aro-Kito, One Who Awaits. That spire lifted shimmering walls and patinaed bronze roof above most of its neighbors; otherwise its corkscrew ramps and twisted buttresses were typical Eyzka architecture. The operations within, however, resembled none which had yet been seen on Zatlokopa, or in this entire civilization-cluster.

Terran Traders, Inc., had leased the whole building.

As yet the company was not big enough to fill every room.

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There was no reason why the *Europa* crew should not live there, and a number of the women did. But some, like Sigrid and Alexandra, had to get away from their work physically or explode. They took lodgings throughout the city.

Occasionally, though, as the company's growth continued, work sought them out. This evening Alexandra was bringing an important potential client home for dinner. The sha-Eyzka were very human in that respect: they settled more deals over dessert and liqueurs than over desks and dictoscribes. If Terran Traders could please Taltla of the sha-Oktzu—and if they could thus land that house's account—a big step forward would have been taken.

Sigrid looked at her watch. By now she was used to the time units, eight-based number system and revolving clock faces employed here. Damn! The others would arrive in ten minutes, and she hadn't perfumed yet.

A MOMENT she lingered, savoring the fresh air that blew across her skin. Zatlokopa was not only terrestroid, but midway through an interglacial period. Climatically it was a paradise for humans. The women had quickly adopted a version of native dress, little more than shorts and sandals, with the former only for the sake of pockets. The sun slanted long rays across the towers, a goldenness that seemed to fill the atmosphere. How quiet it was!

Too quiet, she thought. A winged snake cruised above the many-steepled skyline, but nothing else moved. No groundcars. No fliers. Not a walker in the grassy lanes between buildings, or a boat on the sunset-yellow canals. The city had subways, elevated tunnel-streets that looped like vines from tower to tower, halls and shaftways in the houses themselves. This was not Earth, she knew. It never had been, never could be.

Nothing could ever again be Earth.

A spaceship lifted silent on paragravity, kilometers distant and yet so big that she saw sunlight burn along its flanks. The Holdar liner, she thought; we have a consignment aboard. That reminded her. She had no time for self-pity. Closing the window, she hurried into the kitchen and checked the autochef. Everything seemed under control. Thank God for the high development of robotics in this cluster. No human cook had the sense of taste and smell to prepare a meal that an Eyzka would think fit to eat.

Sigrid returned to the living room, where Earth-type furniture looked homely and lost amidst

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intricate vaulting and miniature fountains. The perfume cabinet slid open for her. She consulted a chart. Formality on Zatlokopa paid no attention to clothes, but made a ritual of odors. For entertaining a guest of Taltla's rank, you used a blend of Class Five aerosols... She wrinkled her nose. Everything in Class Five smelled alike to her—rather like ripe silage. Well, she could drench herself with . . . let's see, the sha-Eyzka usually enjoyed cologne, and there was some left from the ship . . . Her hand closed on the little cut-glass bottle.

The door said: "Two desire admittance."

Had Alexandra brought the fellow here early? She'd been *told* not to. "Let them in," Sigrid said without looking at the scanner. The door opened.

BLANK, glistening metal met her eyes.

Not sun-browned human skin or the green and gold fur of an Eyzka, but polished alloy. The robots were approximately humanoid, a sheer two and a half meters tall. She stared up, and up, to faceless heads and photoelectric slits. Those glowed dull red, as if furnaces burned behind.

"*Kors i Herrans namn!*" she exclaimed. "What's this?"

One glided past her, cat-silent. The other extended an arm and closed metal fingers on her shoulder, not hard, but chilling. She tried indignantly to step back. The grip tightened. She sucked in a gasp.

The other roobt came back. It must have checked if she was alone. The first said: "Come. You need not be harmed, but make no trouble." It spoke Uru, which was also the interstellar auxiliary language in this cluster as in several others.

"What the blazes do you mean?" Anger drove out fear.

Hearing her speak in Eyzka, the robot shifted to that language, fluent though accented. It laid its free hand on her head. The fingers nearly encircled her skull. "Come, before I squeeze," it ordered.

That grip could crush her temples like an almond shell. "Make no outcry," the second robot warned. Its accent was even thicker.

Numbly, she accompanied them out. The corridor was a tube from nowhere to nowhere; doors were locked and blind; only the ventilators, gusting a vegetable smell in her face, made any noise. Her skin turned cold and wet, her lips tingled.

They picked the right hour for a kidnapping, she thought in hollowness. Nearly everyone is still at work, or else inside preparing for the workers' return. You won't find casuals moving about,

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as you would in a human city. This is not Earth. Because Earth is a cinder, ten thousand light-years distant.

She grew aware of a pain in one hand. With a dull astonishment, she saw that she still gripped the cologne bottle. The faceted glass had gouged red marks into her palm.

Suddenly she lifted the thing, unscrewed the atomizer nose and poured the contents over her head.

Steel fingers snatched it from her, and took a good deal of skin along too.

Sigrid tried not to whimper with pain. She sucked her hand while the twin giants bent their incandescent gaze on the bottle. The throbbing eased. No bones seemed broken . . .

The robots conferred in a language she didn't know. Then to her, in sharp Eyzka: "Attempted suicide?"

"The liquid isn't corrosive," the other machine observed.

You noseless idiot! Sigrid thought wildly. She jammed her bleeding hand into one pocket and let them hustle her along.

FOOTFALLS were inaudible. Nothing lived, nothing stirred, save themselves. They went down a dropshaft to a tunnel. A public gravsled halted at an arm signal. They boarded and it accelerated smoothly along its automatically programmed route.

They aren't independent robots, Sigrid decided. She was becoming able to think more coolly now. They're remote-control mechanisms. I've never seen their type before. But then, there are thousands of kinds of automaton in this galactic region, and I've been here less than a year. Yes, they're just body-waldos.

But whose? Why?

Not natives. The sha-Eyzka had received the humans kindly, in their fashion: given them the freedom of Zatlokopa, taught them language and customs, heard their story. After that the newcomers were on their own, in the raw capitalism which dominated this whole cluster.

But a small syndicate of native investors had been willing to take a flyer and help them get started. There wasn't much question of commercial rivalry yet. The women's operations were too radically unlike anything seen before. Carriers and brokers existed in plenty throughout this cluster, but not on the scale which Terran Traders contemplated—nor with such razzle-dazzle innovations as profit sharing, systems analysis and motivational research among outworld cultures. So the kidnappers were not likely to be Eyzka competitors.

The accent with which the

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robots spoke, and the failure of their operators to guess what was in the cologne bottle, also suggested—

The sled halted for a native passenger.

He bounded on gracefully, beautiful as a hawk or a salmon had been beautiful on Earth. Steel fingers clenched about Sigrid's wrist till she felt her bones creak. She didn't cry out, though. "Not one sign to him," the robot murmured in Uru.

"If you'll let me go, I won't," she managed.

The pressure slackened. She leaned weakly back on the bench. The Eyzka gave her a startled glance, took out a perfumed handkerchief and pointedly moved as far from her as he could.

Presently she was taken off the sled. Down another ramp, through another passage, twist, turn, a last downward spiral, a dark dingy tunnel with a hundred identical doors, and one that opened for her. She stepped through between the robots. The door closed again at her back.

A DOZEN creatures sat at a table. They were squat and leathery, with flat countenances like goblins. Two more were at a waldo panel in the rear of the room. Those had obviously been guiding the robots. They also turned to face her, and the machines flanking Sigrid became statues.

The room was redly lit, shadowful and cold. A record player emitted a continuous thin wailing.

The creatures were Forsii, Sigrid realized. The second most powerful race in this cluster. She might have guessed.

One goblin leaned toward her. His skin rustled as he moved. "There is no reason to waste time," he clipped. "We have already learned that you stand high among the sha-Terra. The highest ranking one, in fact, whom it was practicable for us to capture. You will cooperate or suffer the consequences. Understand, to Forsi commercial operations are not merely for private gain, as here on Zatlokopa, but are part of a larger design. Your Terran Traders corporation has upset the economic balance of this cluster. We extrapolate that the upsetting will grow exponentially if not checked. In order to counteract your operations, we must have detailed information about their rationale and the fundamental psychology behind it. You have shrewdly exploited the fact that no two species think entirely alike and that you yourselves, coming from an altogether foreign civilization-complex, are doubly unpredictable. We shall take you home with us and make studies."

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Despite herself, Sigrid's knees wobbled. She leaned on one massive robot and struggled not to faint.

"If you cooperate fully, the research may not damage you too much," said the Forsiu. "At least, it will not be made *unnecessarily* painful. We bear you no ill will. Indeed, we admire your enterprise and only wish you had chosen our planet instead of Zatlokopa." He shrugged. "But I daresay climate influenced you."

"And society," she husked. "A d-d-decent culture to live in."

He was not insulted. Another asked curiously, "Did you search long before picking this culture?"

"We were lucky," Sigrid admitted. Anything to gain time! "We had . . . this sort of goal . . . in mind—a free enterprise economy at a stage of pioneering and expansion. But there are so many clusters. After visiting only two, though, we heard rumors about yours." A measure of strength returned. She straightened. The Forsii were apparently even more dull-nosed than humans, which gave some hope. "Do you think you can get away with this crime?" she blustered. "Let me go at once and I'll make no complaint against you."

The goblins chuckled.

"Best we start with you at once," the leader told her. "If we can reach the spaceport before the evening rush, so you are not noticed by anyone, our ship can ask immediate clearance and lift within an hour. Otherwise we may have to wait for the same time tomorrow."

Sigrid shivered in the bitter air.

"What harm have we done?" she protested. "We sha-Terra don't threaten anybody. We're alone, planetless, we can't have children or —"

THE chief signaled his waldo operators, who returned to their control boards.

"We hope to leave within a few years," Sigrid pleaded. "Can't you realize our situation? We've made no secret of it. Our planet is dead. A few ships with our own kind—males—are scattered we know not where in the galaxy. We fled this far to be safe from Earth's unknown enemy. Not to become powerful here, not even to make our home here, but to be safe. Then we had to make a living—"

"Which you have done with an effectiveness that has already overthrown many calculations," said a Forsiu dryly.

"But—but—but listen! Certainly we're trying to become rich, as rich as possible. But not as an end in itself. Only as a means. When we have enough wealth, we can hire enough ships . . . to scour the Galaxy for other humans. That's all, I swear!"

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"A most ingenious scheme," the chief nodded. "It might well succeed, given time."

"And then . . . we wouldn't stay here. We wouldn't want to. This isn't our civilization. We'd go back, get revenge for Earth, establish ourselves among familiar planets. Or else we'd make a clean break, go far beyond every frontier, colonize a wholly new world. We are not your competitors. Not in the long run. Can't you understand?"

"The short run is proving unpleasant for us," the chief said. "As for long-range consequences, you may indeed depart, as you say. But the corporate structure you will have built up—still more important, the methods and ideas you introduce—those will remain. Forsi cannot cope with them. So you will now go with us through the rear exit. A private gravsled is waiting to bring us to the spaceport."

The waldo operators put arms and legs into the transmission sheaths, heads into the control hoods. A robot reached out for Sigrid.

She dodged. It lumbered after her. She fled across the room.

No use yelling. Every apartment in this city was soundproofed. The second robot closed in from the other side. They herded her toward a corner.

"Behave yourself!" The chief rose and rapped on the table. "There are punishments—"

She didn't hear the rest. Backed against a wall, she saw the gap between the machines and moved as if to go through it. The robots glided together. Sigrid spun on her heel and went to the right. An arm swooped after her. It brushed her hair, then she was past.

The robots whirled and ran in pursuit. She snatched up a stool and threw it. The thing bounced off metal. Useless, useless! She scuttled toward the door. A robot got there first. She ran back. A Forsiu left his seat and intercepted her.

Cold arms closed about her waist. She snarled and brought her knee sharply up. Vulnerable as a man, the creature yammered and let go. She sprang by him. The stool lay in her path. She seized it and brought it down on a bald head at the table. The *thonk!* was loud above their voices.

Up onto the table top she jumped. The chief grabbed at her ankles. She kicked him in one bulging eye. As he sagged, cursing his pain, she stepped on his shoulder and leaped down behind.

RUNNING faster than human, the robots were on either side of her. She dropped to the floor and rolled beneath the table.

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The Forsii shouted and scrambled. For a minute or more they milled around, interfered with the robots. She saw their thick gray legs churn and stamp.

Someone bawled an order. The Forsii moved out of the way. One robot lifted the table. Sigrid rose as it did. The other approached her. She balanced, waiting. As it grabbed, she threw herself forward. The hands clashed together above her head. She went on her knees before its legs. There was just room to squeeze between. She twisted clear, bounced to her feet, and pelted toward the rear exit.

No doubt it wouldn't open for her—How long had she dodged and ducked? How long could she? The breath was raw in her gullet.

The front door spoke. "Open!" Sigrid yelled, before anyone could shout a negative. And it was not set to obey only a few beings.

It flung wide.

Four sha-Eyzka stood there. And Alexandra, Alexandra! She had the only gun. It flew to her hand.

The robots wheeled and pounced. A bullet ricocheted off one breastplate with a horrible bee-buzz. Alexandra's face twisted in a grin. She held her ground as the giants neared, aimed past them and fired twice. The operators slumped. The robots went dead.

The Forsiu leader howled a command. Recklessly his followers attacked. Two more were shot. Then they were upon Alexandra and her companions in a wave.

Sigrid ran around the melee. To the control panels! She yanked one body from its seat. The sheaths and masks didn't fit her very well, and she wasn't used to waldo operation in any event. However, skill wasn't needed. Strength sufficed. The robot had enough of that. She began plucking gray forms off her rescuers and disabling them. The fight was soon over.

An Eyzka called the police corporation while the others secured the surviving Forsii. "There's going to be one all-time diplomatic explosion about this, my dear," Alexandra panted. "Which . . . I think . . . Terran Traders, Inc., can turn to advantage."

Sigrid grinned feebly. "What a ravening capitalist you have become," she said.

"I have no choice, have I? You were the one who first proposed that we turn merchants." The Yugoslav girl hefted her gun. "But if violence is to be a regular thing, *I* will make a suggestion or two. Not that you did badly in that department, either. When you weren't home, and Taltla said the hallway reeked of cologne, I knew something was amiss. Whoo, what a dose you gave yourself! A

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week's baths won't clean it all off. These lads I got together to help me could even follow where you'd gone by sled, you left such a scent." She looked at the sullen prisoners. Her head shook, her tongue clicked. "So they thought to get tough with us? Poor little devils!"

IX

Waken, all of King Volmer's men!
Buckle on rusted swords again,
Fetch in the churches the dust-covered shield,
Blazoned by trolls and the beasts of the field,
Waken your horses, which graze in the mould,
Set in their bellies the rowels of gold,
Leap toward Gurre town,
Now that the sun is down!

—Jacobsen

RAIN came from the north on a wind that bounced it smoking off roofs and flattened the snake trees on runneling mud. Lightning glared above, stark white and then a blink of darkness; thunder banged through all howls and gurgles. The Loho crawled into their beehive huts and wallowed together, each heap a family. Not even the Tall Masters could demand they work in such weather! Only Dzhugach Base, domes and towers and sky-pointing ships, held firm in the landscape.

During the past few weeks, Donnan had come to know the Kandemirians well enough that he suspected a certain symbolism when Koshcha of the Zhanbulak told him over the intercom that the paragrav detector would receive a free-space test as scheduled. He saluted and switched off the speaker. "They're on their way, boys," he said. "Twitter-tweet—" he meant one of the natives that did menial work around the place; a few spoke Uru—"remarked to me that it's raining cats and dogs, which on this planet means tigers and wolverines. But our chums aren't going to let that stop them."

He saw how the forty men grew taut. Howard moistened his lips, O'Banion crossed himself, Wright whispered something to Rogers, Yule in his loneliness on the fringe clamped fists together till the knuckles stood white. "Calm down, there," Donnan said. "We don't want to give the show away yet. Maybe no one here savvies English or can read a human expression, but they aren't fools."

Goldspring wheeled forward the detector, haywired ugliness on a lab cart. The biggest chunk of luck so far in this caper, Donnan thought, had been Koshcha's agreement to let them have one model here in their living quar-

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ters to tinker with when Goldspring and his assistants were not actually in the base workshop.

To be sure, the human request was reasonable. In the present state of the art, an interferometric detector was not a standardized jigsaw puzzle but a cranky monster made to work by cut and try. So the more time Goldspring had to fool around with such gadgets, the sooner he would get at least one of the lot functioning. This was the more true as the detectors being built here were much scaled up from the one he had used aboard the *Hrunna*.

As for the rest of the men, especially those not qualified to help in the workshop, they also benefited. Without something like this, to think about and discuss, they might have gone stir crazy. No hazard was involved to the Kandemirians, no fantasy about the prisoners turning a micro-ultra-filtmeter into a Von Krockmeier hyperspace lever and escaping. Koshcha's physics team knew precisely what each electronic component was and for what mathematical reason it was there. No Earthling touched any equipment until Goldspring's lectures had convinced some very sharp minds that his theory was sound and his circuit diagrams valid.

Furthermore, the prison suite was bugged.

Nevertheless, Koshcha might well have refused Donnan's request for parts to build a detector in the living quarters. If so, Donnan's plan for crashing out would not have been completely invalidated, but the escape of the entire human crew would have been impossible.

Not that it looked very probable yet.

GOLDSPRING'S face glistened with sweat. "Ready to go, then . . . I think," he said. The few trained men who were supposed to accompany him into space today gathered close around, apart from the rest. Donnan joined their circle. His grin at them was the merest rictus. His own mouth was dry and he couldn't smell their sweat, he stank so much himself. His awareness thrummed.

But he functioned with an efficiency that a distant part of him admired. The technicians around the cart shielded it from the telecom eye. Goldspring unbolted a cover on the awkward machine. Donnan plunged his hands into its guts.

A minute later he nodded and stepped back. Goldspring returned the cover. Ramri joined Donnan, taking the man's arm and standing close to hide the bulge under the coat.

"Do you truly believe we shall

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succeed?" the Monwaingi fluted in English.

"Ask me again in an hour," Donnan said. Idiotically, since they had discussed this often before: "You sure you can operate such a boat, now? I mean, not just that it's built for another species than yours, but the whole layout'll be new. The manuals will be in a foreign language. Even the instruments, the meters—Kandemirian numbers are based on twelve, aren't they? I mean—"

"I believe *we* can do it," Ramri said gently. "Spaceships from similar planets do not differ that much from each other. They cannot. As for navigation tables and the like, I do have some familiarity with the Erzhuat language." His feathers rose, so that blueness rippled along them. "Carl-my-friend, you must not be frightened. This is a moment for glory."

"Tell me that, too, later on." Donnan tried to laugh. He failed.

"No, can you not understand? Had there been no such hope as this, I would have ended my own life weeks ago. So nothing can be lost today. In all the years I spent on Earth as an agent of the Tanthai traders, I never grasped why the onset of hope should terrify you humans more than despair does."

"Well, we, uh, we just aren't Monwaingi, I reckon."

"No. Which is best. What a splendid facet of reality was darkened when Earth came to an end! I do not think there can ever have been a nobler concept than your own country's constitutional law. And chess, and Beethoven's last quartettes, and—"Ramri squeezed the arm he held. "No, forgive me my friend, your facet is not gone. It shall shine again . . . on New Earth."

They said no more. A thick stillness descended on the room.

AFTER some fraction of eternity, the main door opened. Four soldiers glided in and posted themselves, two on either side, guns covering the men. Koshcha and half a dozen associates followed. The chief physicist gestured imperiously. "Come along, you," he snapped in Uru. "Goldspring's party. The rest get back there."

Donnan and Ramri advanced.

The Kandemirians seemed endlessly tall. They've only got thirteen or fourteen inches on you, Donnan told himself under the noise in his head. That don't signify. The hell it doesn't. Longest fourteen inches I ever looked up. He cleared his throat.

"I'd like to come too," he said. "In fact, I'd like to take our full complement along."

"What nonsense is this?" Koshcha stiffened.

Donnan came near enough to

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buttonhole the scientist, if a buttonhole had been there. "We're all technically trained," he argued. "We're used to working as a team. We've all fiddled around with the detector you let us build in here, talked about it, made suggestions. You'd find our whole bunch useful."

"Crammed into a laboratory flitter with my own personnel?" Koshcha scoffed. "Don't be a clown, Donnan."

"But damn it, we're going off our trolleys in here. The agreement was we'd switch sides and work for your planet. Well, we've done so. We've produced several detectors in your workshops and one in here. Their ground tests have been satisfactory. So when are you going to start treating us like allies instead of prisoners?"

"Later. I tell you, no arrangements—"

Donnan pulled the gun from beneath his coat and jammed it into Koshcha's belly. "Not a move!" he said in a near whisper. "Don't so much as twitch a tendril. Anybody."

The unhuman eyes grew black with pupil dilation. One soldier tried to swing his rifle around from its inward aim. Ramri kicked; three talons struck with bone-breaking force. The weapon clattered down as the soldier doubled in anguish.

Donnan could only hope that his men, crowding near, screened this tableau from the telecom eye with their backs—and that the Kandemirians in the warden's office were too confident by now to watch the spy screen continuously. "Drop your guns or Koshcha dies," he said.

LIKE most nomadic units, this one was organized by clans; the technicians and their bodyguards were blood relatives. And the leader of the group was also a senior Zhanbulak. Furthermore, Donnan had plainly thumbed his rifle to continuous-fire explosive. Before he could be shot, he would have chewed up several Kandemirians. The three soldiers who still covered his men with their own guns might have threatened to shoot them. But the soldiers were too shaken.

Donnan heard their rifles fall. "About face," he commanded. "To the hangar . . . march!"

The Kandemirians stumbled out the door, looking stunned, and down a long, bare, coldly lit corridor. Donnan paced them at the rear, his gun in the crook of an arm. His crew surged after.

Koshcha's mind must be churning below that red ruff. How had the Terrestrials gotten a weapon? By what treachery, through what rebellious Loho or (oh, unthinkable!) what bribed clansman? Maybe in another minute or two

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someone would guess the answer. But that would be too late. Four men behind Donnan had guns now, dropped by the guards.

Four real guns.

Hand-make a new type of device. Complicate your problem by building it on a larger scale than before. Your circuits will remain essentially the same and understandable. Your captors will issue you precisely those conductors, resistors, amplifiers, and other components that you can prove you need. But who pays attention to the chassis? It is only a framework, supporting and enclosing the instrument's vitals. You may have to adjust this or that electronic part to compensate for its properties, but not by much. The chassis is negligible.

So if anyone asks why you are turning out a slim hollow cylinder on lathe and drill beam, explain casually that it is to strengthen the frame and hold a sheaf of wires. If your angle braces have odd shapes, this must be dictated by the geometry of the layout. If a hole in the cabinet, accidentally burnt through, is repaired by bolting a scrap of metal over it, who will notice the outline of that scrap? And so on and so on.

Come the moment of untruth, you quickly remove those certain parts from the chassis, fit them together, and have quite a good imitation of a Kandemirian cyclic rifle.

IF the scheme had failed, Donnan wasn't sure what he would have done. Probably yield completely and let Kandemir have his soul. As matters had developed, though, he was committed. If his plan went up the spout now, his best bet was to try and get himself killed.

Fair enough, he thought.

They started down a ramp. Two noncoms going the other way saluted. They couldn't hide their surprise at the human crowd in the officers' wake. "Let 'em have it, boys," Donnan said. "Quiet, though."

A gun burped. The noncoms fell like big loose-jointed puppets. Their blood was darker red than a man's. Donnan wondered momentarily if they had wives and kids at home.

"No, you murderer!" Koshcha stopped, half turning around. Donnan jerked the fake gun at him.

"March!"

They hustled on. There was little occasion, especially today, for anyone to use the flitter hangar. But on arrival—

Two sentries outside the gate slanted their rifles forward. "Halt! By what authority—" A blast from behind Donnan smashed them to fragments, smeared

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across the bright steel panels.

A Kandemirian prisoner roared, wheeled and sprang at him. He gave the fellow his gun butt in the mouth. The Kandemirian went to one knee, reached forward and caught Donnan's ankle. They rolled over, grappling for the throat. Rifles coughed above them. An alarm began to whistle.

"The door's locked!" Ramri shouted. "Here, give me a weapon, I shall try to blast the lock."

The Kandemirian's smashed mouth grinned hatred at Donnan. The giant had gotten on top of him, twelve fingers around the windpipe. Donnan felt his brain spin toward blackness. He set his own wrists between the enemy's and heaved outward with all the force in his shoulders. The black nails left bloody tracks as they were pulled free. Donnan slugged below the chest. Nothing happened. The Kandemirians didn't keep a solar plexus there. He climbed to a sitting position by means of the clansman's tunic. The unfairly long arms warded him off. Thumbs sought his eyeballs. He ducked his head and pummeled the enemy's back.

Ramri left the sprung door in a single jump. One kick by a spurred foot opened the Kandemirian's rib cage. Donnan crawled from beneath. The alarm skirled over his heartbeats and his gulps for air.

"Hurry!" Howard shouted. "I hear 'em coming!"

THE men poured through, into the cavernous hangar. Rank upon rank of small spacecraft gleamed almost as far as you could see. One was aimed roofward in its cradle. The airlock stood open. A fight ramped around there, as the humans attacked its crew.

"I must have a few moments aboard to study the controls," Ramri said to Donnan, who lurched along on Goldspring's arm. "I know that one alone can manage a flitter in an emergency, but I am not certain how, in this case."

"We'll oblige you," Lieutenant Howard said. He called out orders. A good man, Donnan thought remotely; a damn good second-rank officer. His trouble had been trying to be skipper. Well, I'm not showing up any too brilliantly in that post either, am I?

A flying wedge of humans formed behind Howard. He had a gun. The rest had mass and desperation. They charged over the gang ramp and through the lock. The Kandemirians gave way —no choice—and tried to follow. The remaining Terrestrials fell on them afresh. Bullets raved, seeking flesh.

"Let's get you aboard also,

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Captain," Goldspring said. "Get everybody aboard. We haven't much time."

"Haven't any time," said Yule. "Here comes the garrison."

A few giants loomed at the sagging door. Slugs hailed around them. One fell, the other two ran from sight. "They'll be back," Donnan mumbled. "And there are more entrances than this. We need a few men to hunker down—the boats and cradles'll provide cover—and stand 'em off till we can lift. Gimme a gun, somebody. Volunteers?'

"Here," said Yule. A curious, peaceful look descended on his face. He snatched away the rifle which O'Banion had handed Donnan.

"Gimme that," Donnan choked.

"Get him aboard, Mr. Goldspring," Yule ordered. "He'll be needed later on."

DONNAN clung to the physicist, too dizzy and beaten to protest. Goldspring regarded Yule for a second or two. "Whoever stays behind will be killed," he said slowly.

Yule spat. "I know."

"I'll design a weapon in your name," Goldspring said. "I thought of several while we were here."

"Good." Yule shoved him toward the lock. Three other men joined the rearguard. They posted themselves wherever they could find shelter. Presently they were alone, except for the dead.

Then, from several directions, the Kandemirians poured in. Explosions echoed under the roof. Thermite blazed and ate. Goldspring risked his life to appear in the airlock and wave: *We can go now.*

"You know damn well my squad'd never make it," Yule shouted at him. "Shut that door, you idiot, and let us get back to work!" He wasn't sure if Goldspring could hear through the racket or see through the smoke and reek. But after a few seconds the lock closed. The flitter sprang from its cradle. Automatic doors opened above. Rain poured in, blindingly, for the moment that the flitter needed to depart . . .

"We are safe," Ramri sighed.

"From everything but missiles and half the Grand Fleet, trying to head us off before we make an interference fringe," Donnan husked.

"What can they do but annihilate us?"

"Uh . . . yes. I see what you mean. Safe."

Ramri peered into the viewscreen. Lightning had given way to the stars. "My friend," he said, and hesitated.

"Yes?" Donnan asked.

"I think—" The troubled voice faded. "I think we had best

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change course again." The Monwaingi touched controls. They were depending on random vectors to elude pursuit. After all, space was big and the Kandemirian defenses had been designed to halt things that moved planetward, not starward.

"That isn't what you were getting at," Donnan said.

"No." Decision came. Ramri straightened until his profile jutted across the constellations. "Carl-my-friend, I offer apology. But many years have passed since I saw my own people. I am the only one here who can read enough Erzhuat to pilot this vessel. I shall take us to Katkinu."

"Shucks, pal," Donnan said. "I expected that. Go right ahead." His tone roughened. "I'd like a few words with your leaders anyway."

X

A nation, to be successful, should change its tactics every ten years.
—Napoleon

FOR a moment, when his gaze happened to dwell on the horizon, Donnan thought he was home again. Snowpeaks afloat in serene blue, purple masses and distances that shaded into a thousand greens as the valley floor rolled nearer, the light of a yellow sun and the way cloud shadows raced across the world, wind blustering in sky and trees, woke him from a nightmare in which Earth had become a cinder.

He thought confusedly that he was a boy, footloose in the Appalachians; he had slept in a hayloft and this dawn the farmer's daughter kissed him good-by at the mailbox, which was overgrown with morning glory... A night that stung descended on his eyes.

Ramri glanced at him, once, and then concentrated on steering the groundrunner.

After his years on Earth and in space, the avian found it a little disconcerting to ride on the chair-like humps of a twenty-foot, eight-legged mammaloid and control it by touching spots that were nerve endings. Such vehicles had been obsolescent on Katkinu even when he left. The paragrav boats that flitted overhead were more to Tantha liking. But today he and Donnan were bound from his home to the Resident, who was of the Laothaung Society. Paying a formal call on a high official from *that* culture, and arriving in dead machinery, would have been an insult.

After a while, Donnan mastered himself. He fumbled with his pipe. The devil take tobacco rationing . . . just now . . . especially since Ramri assured him that the creation of an almost

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identical leaf would be simple for any genetic engineer on any Monwaingi planet. When he had it lit, he paid close attention to nearby details. Katkinu was not Earth. Absolutely not. And he'd better fix that squarely in his head.

Even to the naked eye, the similarities of grass and foliage and flowers were superficial. Biochemical analysis showed how violently those life forms differed from himself. He had needed anti-allergen shots before he could even leave the space flitter and step on Katkinuan soil. The odors blown down the wind were spicy, mostly pleasant, but like nothing he had ever known at home. Along this road (paved, if that was the word, with a thick mossy growth, intensely green) walked blue parrot-faced creatures carrying odd-shaped tools and bundles. Houses, widely scattered, each surrounded by trees and a brilliant garden, were themselves vegetable: giant growths shaped like barrel cacti, whose hollow interiors formed rooms of nacreous beauty. A grainfield was being cultivated by shambling octopoids, mutated and bred for one purpose—like the thing on which he rode.

Yeah, he thought, I get the idea. These people aren't human. Even Ramri, who sings Mozart themes and has Justice Holmes for a hero—Ramri, about the most *simpático* guy I ever met—he's not human. He came back to his wife and kids after eight years or whatever it was, and he might simply have stepped around the corner for a beer.

Of course, Donnan's mind rambled on, that's partly cultural. The Tantha civilization puts a premium on individualism. The family isn't quite that loose in the other Monwaingi Societies, I reckon. But no human anywhere could have been that casual about a long separation, when obviously they're an affectionate couple. Ramri did say to me once, his species doesn't have a built-in sex drive like ours. When the opposite sex is out of sight, it really and truly is out of mind. Nevertheless—!

Or was I just missing the nuances? Did a few words and a hug accomplish as much for Ramri and his wife as Alison and I could've gotten across in a week?

—If I'd ever given Alison the chance.

HE said quickly: "You'd better put me straight on the situation here. I'm still vague on details. As I understand your system, each planet colonized by your people has a governor general from Monwaing, the mother world. Right?"

Ramri scratched his crest.

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"Well, no," he answered. "Or yes. A semantic question. And not one that can ever be resolved fully. After all, since Resident Wandwai is a Laothaungi, he speaks another language from mine, lives under different laws and customs, enjoys art forms strange to me. So what he understands by the term *Subo*—'Resident,' you say—is not identical with what a Tantha like myself understands. Such differences are sometimes subtle, sometimes gross, but always present. He doesn't even use the same phonetic symbols."

"Huh? I never realized—I mean, I assumed you'd at least agree on an alphabet and number signs."

"Oh, no. Some Societies do, to be sure. But Laothaung, for instance, which makes calligraphy a major art, finds our Tantha characters hideous. All Monwaingi writing does go from left to right, like English or Erzhuat, and not from right to left like Japanese or Vorlakka. But otherwise there is considerable variation from Society to Society. Likewise with mathematical ideograms. Naturally, any cultured person tries to become familiar with the language and traditions of the more important foreign Societies. Wandwai speaks fluent Tanthai. But I fear I am quite ignorant of Laothaungi. My interests were directed elsewhere than the arts. In that, I am typical of this planet Katkinu. We Tanthai have taken far more interest in physical science and technology than most other Monwaingi civilizations. Some, in fact, have found such innovations extremely repugnant. But physics proved welcome to the Tanthai world-view."

"HEY," Donnan objected, "your people must have had some physics even before the galactics discovered Monwaing. Otherwise you could never have developed these systematic plant and animal mutations, let alone build spaceships yourselves."

"Yes, yes. There was considerable theoretical physics on Monwaing when the Uru explorers arrived. And it found a certain amount of practical application. The emphasis lay elsewhere, though. Your recent development on Earth was almost a mirror image of Monwaing two centuries past. You knew far more biological theory than you had yet put into engineering practice, because your intellectual and economic investments were already heaviest in physical, inanimate matter. Our situation was the reverse."

"This is getting too deep for me," Donnan said. "I'll never comprehend your setup. Especially as it was before you got space travel. I can see your different civilizations these days,

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scattering out to new planets where they aren't bothered by unlike neighbors. But how did totally different cultures ever coexist in the same geographical area?"

"They still do, on Monwaing," Ramri said. "For that matter, several other Societies have planted colonies of their own here on Katkinu. Tantha merely has a majority." He pointed out a cluster of buildings, tall garishly colored cylinders erected in steel and plastic, half a mile off the road. The avians walking between them wore embroidered jackets over their feathers. "That is a Kodau village, for example. I suppose you could best describe them as religious communists. They don't bother us and we don't bother them. I admit, such peace was slowly and painfully learned. If we never had major wars on Monwaing, we had far more local flareups than you humans. But eventually methods were developed for arbitrating disputes. That is what a nation was, with us— a set of public technical services, jointly maintained. And peacekeeping is only another technology, no more mysterious than agronomy or therapeutics. Once that idea caught on, it was simple.

HE cocked an eye at Donnan, decided the man still needed to be soothed, and continued reciting the banal and obvious historical facts.

"To be sure, as proximity and mutual influence grew, the various cultures were losing their identities. Space travel came as a savior. Now we have elbow room again. We can experiment without upsetting the balance between ourselves and our intermingled neighbor Societies. And fresh, new influences have come from space to invigorate us.

"Really, Carl-my-friend, despite our many talks in the past, I do not believe you know what an impact Terrestrial ideas have had on the Monwaingi. You benefited us not simply by selling us raw materials and machine parts and so on— your engineers, in effect, working cheaper than ours for the sake of learning modern techniques. But you presented us with your entire philosophy. Tantha in particular had looked upon itself as rather reactionary and anti-scientific. You made us realize that technology *per se* did not conflict with our world-view. Only biological technology. The inherent callousness of manipulating life." His gesture at the beast they rose was eloquent, like a man's grimace.

"That ruthlessness was spreading into the psychotechnical field too," he went on. "In other Societies, talk was being heard of adjusting the personality to suit—

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like the genes of any domestic animal! Such concepts alarmed us. Yet if we Tantha failed to keep pace with innovation, we would dwindle, impotent . . . Then, suddenly, on Earth and especially in America, we found a socio-economic system based on physics rather than biology. It was less subtle, perhaps, than the traditional Monwaingi approach; but potentially it was of far greater power . . . and humaneness. We were eager to adopt what we had seen. Do you know, even I am astounded at how far change has progressed on Katkinu in my absence. Why, in my own house, fluorescent panels. When I left, glowfly globes were still the only artificial light. And that is a trivial example. I tell you, your species has inspired my Society."

"Thanks," Donnan grunted.

Humans couldn't have had such a history, he thought. Maybe the vilayet system of the Ottoman Empire had approximated it, but not very closely. No human culture had ever experimented with radical social change and not paid a heavy emotional price. Think how many psychiatrists had been practicing in the U.S.A., or walk down any American street and count on one hand the people who actually looked as if they enjoyed life.

To a Monwaingi, though, change came natural. They didn't need roots the way men did. Possibly their quasi-instinctive rituals of music and dance, universal and timeless, gave the individual that sense of security and meaningfulness which a human got from social traditions.

No help here for the last Earthmen, Donnan thought wearily. We've got to find our own planet and start up our own way of life again. If we can have kids who'll get some benefit from our trouble. Otherwise, to hell with it. Too much like work.

RAMRI made an embarrassed, piping noise. "Er . . . we seem to have wandered over half the Galaxy in this discussion," he said. "You started asking what Resident Wandwai and his staff do. Well, he represents the mother world, and thus the whole coalition of our planets and Societies. He administers the arbitration service. And, these days, he is a military liaison officer. You know that the Kandemirian menace requires each Society to maintain spatial defense forces. The central government on Monwaing coordinates their activities as needed, through the Resident on each colonial world."

Also, Donnan reflected, the central government on Monwaing operates some damned efficient cold-war type diplomacy, espionage, and general intriguing. Yes, I

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do think we had to come to one of these planets and talk with one of their big wheels.

"I know each Society has spokesmen on Monwaing," he said. "But does each one have an equal voice in policy?"

"A shrewd question," Ramri approved. "No, certainly not. How could the primitivistic Maudwai or the ultra-pacifistic Bodantha find ways to keep Kandemir from gobbling up our scattered planets? The handling of foreign affairs and defense gravitates naturally toward members of the most powerful cultures, notably Laothaung and Thesa. We Tanthai are not unrepresented. Still, we tend to be explorers and traders rather than admirals and ambassadors . . . You needn't worry about etiquette or protocol today. Resident Wandwai won't expect you to know such fine points. Talk as plainly as you wish. He was so quick to grant your request for an interview that I am sure he is also anxious for it."

Donnan nodded and puffed his pipe in silence. He couldn't think of anything else to say, and by now, like his whole crew, had learned patience. If they must zigzag clear into the Libra region, a hundred light-years closer to Earth than Vorlak was, and then cool their heels for days or weeks in the Monwaingi sector of space, naturally, if the Resident be-

why quibble over the extra hour this beastie took to carry him where he was going? The time wasn't really wasted, even. At least, Goldspring and his helpers were drafting some gadgets with awesome potentialities.

SOONER or later, if he didn't get killed first, Donnan would find who had murdered Earth and exact a punishment. But no hurry about that. He smoked, watched the landscape go by, and thought his own thoughts. Now and then, as on this ride today, he had some bad moments. But in general, he had begun to be able to remember Earth with more love than pain.

The trill jarred him to alertness. "We approach."

He stared about. The groundrunner was passing through an avenue of grotesquely pollarded trees, whose shapes kept altering as the wind tossed and roared in them. On either side lay terraced gardens whose forms and hues were like some he recognized from dreams. Directly ahead rose an outsize building . . . no, a grove of house-trees, vines, hedges, cascading from a matted-together roof to a fluidly stirring portico. The music that wailed in an alien scale seemed to originate within those live walls. He had seen nothing like this on Katkinu. But

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longed to a different culture from the Tanthai—

A dwarfish being took charge of the groundrunner. The being's eyes were vacant and it could only respond to Ramri's simplest commands. Another organic machine; but Donnan was shocked at its obviously Monwaingi descent. Planned devolution went rather further than chattel slavery had ever done on Earth. No wonder the Tanthai wanted to get away from biotechnology.

He climbed down the vehicle's extended foreleg and followed Ramri into the portico. Three soldiers stood on guard, armed with tommy guns adapted from a Terrestrial pattern as well as with fungus grenades. Ramri and they exchanged intricate courtesies. One of them conducted the visitors along a rustling archway, where sunlight came and went in quick golden flecks, and so to an office.

That room was more familiar, its walls the mother-of-pearl grain of dukaung wood, the desk and sitting-frame like any furniture in Ramri's home. But Donnan could not recognize the calligraphic symbols burned into the ceiling. Resident Wandwai of Laothaung made a stately gesture which sent Ramri into a virtual dance. Donnan stood aside, watching his host.

Wandwai belonged to a different race as well as another civilization. His feathers were almost black, eyes green, beak less strongly curved and body stockier than Ramri's. Besides the usual purse at the neck, he wore golden bands twining up his shanks.

FORMALITIES past, the Resident offered Ramri a cigar and lit one for himself. He invited Donnan to sit on top of the desk while he and the space pilot relaxed in frames. "I wish I could give you refreshment, Captain," he said in fluent Uru. "But poisoning you would be poor hospitality."

"Thanks anyway," Donnan said.

"Since the first news of your arrival here, I have been eager to see you," Wandwai continued. "However, custom forced me to wait until you requested this meeting. My custom, I mean; it would have been impolite for a Tantha not to issue an invitation. In the absence of knowledge about your own preferences, I decided to abide by Laothaungi usage."

"I should think military business would take precedence over company manners," Donnan said.

"Military? Why so? Earth never achieved any military importance."

Donnan swallowed hurt and anger. A Tantha wouldn't have

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spoken so cruelly. Doubtless Wandwai didn't realize—yes, the Laothaungi having a biotechnical orientation, they would indeed be more hardboiled than average—"We escaped from Kandemir's main advanced base," the human pointed out. "Didn't you expect we'd have information?" He paused, hoping for an impressive effect. "Like the fact that Earth *was* getting a bit involved in the war."

"I presume you refer to the pact between Vorlak and that one Terrestrial nation. Really, Captain, we knew about that before the papers were even signed. Monwaingi agents were everywhere on your planet, remember." Wandwai stopped and considered his words. Donnan wished he could read expressions or interpret shadings of tone. "We did not like that treaty," the Resident admitted. "The eventual Kandemirian response to such provocation could be ominous to us, whose scattered planets have an Earthward flank with no defense or buffer in between. We withdrew as many of our people from Earth as we could."

"I heard about that withdrawal from some of Ramri's friends, the other day," Donnan said rather grimly.

"Not that we expected immediate trouble in that area," Wandwai said. "But it seemed well to play safe . . . especially since the coming upset of the uneasy power balance among Terrestrial nations might bring on a general internecine war. I regret that so few Tanthai listened to the central government's warnings and came home before Earth perished. Other cultures had fewer but wiser people there."

You arrogant bastard! Donnan flared in himself.

WANDWAI disarmed him by letting the cigar droop in his delicate fingers and saying at once, low and like a threnody: "Forgive any unintentional offense on my part, captain. I know, to a very small degree, what a sorrow you have suffered. Can we Monwaingi in any way offer help or consolation, call on us as your first and best friends. The news that Earth had been sterilized sent a wave of horror through us. No one believed the Kandemirian denial of guilt. The Monwaingi coalition has, ever since, been aiding Vorlak far more heavily than before. Independent planets such as Unya and Yann tremble on the brink of declaring war; one hopeful sign that Kandemir can be defeated will decide them. Vassal worlds like T'sjuga have seen local revolts, which can probably be developed into full-scale insurrections. You know what a threat Kandemir is. By

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thus stirring the whole cluster to action, Earth has not died in vain."

Something in the phrasing drew Donnan's attention. Slowly he focused his mind. He felt muscles tighten; a chill went tingling over his scalp.

"You don't, yourself, believe the nomads did it," he breathed.

"No," said Wandwai. "Of course, once Earth was gone, they seized the opportunity to interdict the Solar System by planting orbital missiles whose control code is known only to them. Who else could those weapons belong to?"

"Why'd they do that, if they didn't kill Earth in the first place?"

"When the planet has cooled, a few years hence, it will still have water, oxygen, an equable temperature. The biosphere can be rebuilt. I feel sure Kandemir plans to colonize Earth sometime in the future. But certain very recent evidence has come to our attention on Monwaing, which strongly indicates they are merely seizing an opportunity presented them; that they did not commit the actual murder. Frankly, we have not released the information, since general anti-Kandemirian sentiment is desirable. But you, as a human, have the right to know."

Donnan slid off the desk. He stood with legs apart, shoulders hunched, fists doubled, braced for the blow. "Have you got any notion . . . who did it?"

Ramri came to stand beside him and stare in bewilderment at the Resident.

Wandwai nodded. "Yes," he said, "I do."

XI

Kine die, kinfolk die,
And so at last yourself.
This I know that never dies:
How dead men's deeds are
deemed.

—Elder Edda

"OKAY," Donnan said hoarsely. "Spit it out."

Still the Resident watched him, eyes unblinking in that motionless black head. Until: "Are you strong enough?" Wandwai asked, almost inaudible. "I warn you, the shock will be great."

"By God, if you don't quit stalling—! Sorry. Please go ahead."

Wandwai beckoned a desk drawer to open. "Very well," he agreed. "But rather than state the case myself— I fear my own cultural habits strike you as tactless—let me present the evidence. Then you can reach your own conclusions. When I knew you were coming here, I took this item from the secret file." He extracted a filmspool. His claws on the floor, the click as he put the

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spool in a projector, seemed unnaturally loud. "This records an interview on Monwaing itself, between Kaungtha of Thesa, interrogation expert of the naval intelligence staff attached to the central government, and a certain merchant from Xo, which you will recall is a spacefaring planet still neutral in the war."

"One moment, honored Resident," Ramri interrupted. "May I ask why— if the secret is important—you have a copy?"

"Knowing several Earth ships were absent at the time of the catastrophe, Monwaing anticipated that one or more would seek a planet of ours," Wandwai answered. "We are the only race whose friendship they could feel certain about. Not knowing which planet, however, or exactly how the crews would react to their situation, the government provided this evidence for every office. Otherwise, refusing to believe a bald statement, the Terrestrials might have departed for an altogether different civilization-cluster." He sighed. "Perhaps you will do so anyway, Captain. The choice is yours. But at least you were given what data we had."

Ramri inhaled on his cigar, raggedly. A whiff sent Donnan spluttering to one side. He never took eyes off the projector. With a whir, a cube of light sprang into existence. After a moment, quarter size, a three-dimensional scene appeared within.

Through an open ogive window—still another architecture—he saw a night sky aglitter with stars, two crescent moons, a rainbow arch that was the rings around Monwaing. Crystal globes in which a hundred luminous insects darted like meteors hung from the ceiling. Behind a desk sat an avian whose feathers were bluish green and who wore a golden trident on his breast. He ruffled papers in his hands, impatiently, though he never consulted them.

THE being who stood before the desk was a Xoan.

Donnan recognized that from pictures only; few had ever visited Earth, which lay beyond their normal sphere of enterprise. The form was centauroid, which is to say there was a quadrupedal body as big as a Shetland pony and an upright torso with arms. But iridescent skin, erectile comb on the head, face dominated by a small proboscis, removed any further resemblance to anything Earthly. The Xoan seemed nervous, shuffling his feet and twitching his trunk.

A disembodied voice sang some phrases in a Monwaingi language. Ramri whispered: "It says, 'Interview between Interrogator Kaungtha and Hordelin-Barjat, chair-

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man of the navigation committee of the spaceship *Zeyan-12* from the planet generally known as Xo: catalogue number—' Never mind. The date is— let me translate—about six months ago."

Kaungtha's replica emitted a trill or two. Then, in Uru, his voice said from the light cube: "Be at ease, Navigator. We wish you no harm. This interview is only to put on official record certain statements previously made by you."

"Under duress!" The Xoan had a ridiculous squeaky voice. "I protest the illegal detention of my ship and personnel on this planet, the grilling I have undergone, the mental distress—"

"At ease, Navigator, I beg you. Your detention was perfectly in accord with ordinary interstellar practice as well as Monwaingi law. If viral contamination is suspected, what can we do but impose quarantine?"

"You know perfectly well that . . ." Hordelin-Barjat subsided. "I understand. If I cooperate, you will give us a clean bill of health and allow us to depart. So . . . I am cooperating." Anxiously: "But this will remain secret? You do promise that? If my superiors ever learn—"

Kaungtha rustled his papers. "Yes, yes, you have our assurance. Believe me, Monwaing is as interested in discretion as Xo. You fear repercussions because of your planet's part in the affair. We much prefer to spare Xo any unfortunate consequences to reputationand livelihood, and let the blame continue to rest where it does. However, for our own guidance, we do want accurate information."

Hordelin-Barjat: "But how did you ever come to suspect that we Xoans—"

Kaungtha (mildly): "The source of the original hints we got deserves the same protection as you. Not so? Let us commence, then. Your vessel belongs to the Xoan merchant fleet, correct?"

HORDELIN-BARJAT: "Yes. Our particular specialty, as a crew, is to establish first contact with promising new markets and to conduct preliminary negotiations. We— that is— the planets where Xo has been trading for the last several generations . . . they are becoming glutted, or else so civilized they need no longer import the . . . uh . . . specialized items manufactured on our world. We need fresh markets. Earth—"

Kaungtha: "Just so. After studying all the information available to you about Earth, you went there, secretly, in the *Zeyan-12*. That was approximately two years ago, correct?" (A sudden bark). "Why secretly?"

Hordelin Barjat (shaken):

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"Well . . . that is . . . no wish to offend others— Monwaing already had interests on Earth—"

Kaungtha: "Nonsense! No treaty forbade competition in the Terrestrial market. The Monwaingi confederation as a whole undertakes no obligation to protect the commercial interests of those member Societies that engage in trade. No, the secrecy was required by your tentative purpose. Explain in your own words what you had in mind."

Hordelin-Barjat: "I— that is— I mean— All those ridiculous nations and tribes there! Holdovers from the Stone Age, and still unable to agree . . . in the face of galactic culture. Agree on unity and global peace—"

Kaungtha: "You hoped, then, to sell one or two of those countries a highly advanced weapon that would overthrow the delicate balance of power existing on Earth. If this became known in advance to the rival nations, either preventive war would break out at once or an agreement would be reached to ban such devices. In either case, Xo would make no sale. Hence the secrecy."

Hordelin-Barjat: "I wouldn't put it just that way, officer. We had no intention—we never foresaw— I tell you, they were mad. The whole race was mad. Best they did die, before their lunacy threatened everyone else."

Kaungtha (sighing): "Spare me the rationalizations."

HORDELIN-BARJAT: "But— but—but you must understand! We are not murderers! Insofar as a psychology so alien could be predicted, we felt that . . . well, believe me, we had even read some of their own theoretical works, analyses of their own situation. A weapon like this had been discussed by Terrestrial thinkers in various books and journals. They felt it would be the ultimate deterrent to aggressions. A guaranteed peace. Well, if the Earthlings themselves believed such a device would have this effect, how should we know otherwise?"

Kaungtha: "Some of them did. Most did not. In two decades of dealing with Terrestrials, we Monwaingi have gotten some insight into their thought processes. They are — were — they had more individual variability than Xoans. More than any two members of one given Monwaingi Society." (Leaning forward, harsh tone, machine-gun rattle of papers.) "You gathered those data which pleased you and ignored the rest."

Hordelin-Barjat: "I — we —"

Kaungtha: "Proceed. Which country did you sell this weapon to?"

Hordelin-Barjat: "Well, actu-

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ally . . . two. Not two countries, exactly. Two alliances. Power blocs. Whatever they were called. We avoided the major powers. Among other reasons, they—uh—"

Kaungtha: "They had too many extraterrestrial contacts. Word of your project might easily have leaked out to civilized planets, who might well have forbidden it. Also, being strong to begin with, the large nations would feel less menaced from every side; less persecuted; less petulant. In a word, less ready to buy your wares. Proceed."

Hordelin-Barjat: "I strongly object to your, er, cynical interpretation of our motives."

Kaungtha: "Proceed, I told you."

Hordelin-Barjat: "Uh — well, our clients had to be countries that did possess some military force—space missiles and so on—and thereby might well expect to be attacked with missiles in the early stages of a war. We approached the Arabian-North African alliance for one. It felt itself being encircled as relations between Israel and the more southerly African states grew increasingly close. And then there was the Balkan alliance, under Yugoslavian leadership. Suspicious of the Western countries, still more suspicious of Russia, from whose influence they had barely broken free. And sure to be a battleground if outright war ever did break out between East and West."

Kaungtha: "Let us positively identify the areas in question. You do not pronounce them very reliably, Navigator." (Projecting a political globe of Earth) "Here, here, here, here. Have I indicated the correct regions?"

Hordelin-Barjat: "Yes." (Hastily.) "You realize these were second- and third-rate powers. They needed defense, not means of aggrandizement. What we sold them—"

Kaungtha: "Describe that briefly, please."

HORDELIN-BARJAT: "A set of disruption bombs. Buried deep in the planetary crust. And beneath the ocean beds. Strategic locations — you are familiar with the technology. The bombs belonging to a given alliance — they would go off automatically, if more than three nuclear explosions above a certain magnitude occurred within the borders of any single member country. All those bombs would explode. At once."

Kaungtha (softly): "And would wipe the planet clean. In seconds."

Hordelin-Barjat: "Yes, humane, quick, yes. Of course, that was not the intention. Not any-

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one's intention. These small powers — they planned to go, oh, very discreetly, in deepest secrecy — they would approach the other governments and say, 'In the event of general war, we are doomed anyway. But now you will die with us. Therefore you must refrain from making war, ever again.' I assure you, the idea was to promulgate peace."

Kaungtha: "Did you witness the actual installation?"

Hordelin-Barjat: "No. My ship only conducted, uh, preliminary negotiations. Others came later, technicians and, and so on. I was informed once, verbally, that the task had been completed and payment made. But I never saw —" (Shriller than before) "I give you *assurance* I was as shocked as anyone to hear — not long afterward — my superiors, too! Who could have known that the whole Terrestrial species was insane?"

Kaungtha: "Have you any idea what might have happened, exactly?"

Hordelin-Barjat: "No. Perhaps . . . oh, I can't say. No doubt a war did break out, regardless. If they were already on edge, those governments, then the increased tension . . . feeling this was a bluff that should be called — Or even an accident. I don't know, I tell you! Let me alone!"

Kaungtha: "That appears sufficient, Navigator. End interview."

The cube of light flickered and blanked out.

DONNAN heard himself scream, "I don't believe it! I won't! Take back your lies!"

Ramri pushed him against the wall and held him till he stopped struggling. Wandwai gazed at the symbols burned into the ceiling, as if to find some obscure comfort.

"Not murder, then," the Resident said at last. "Suicide."

"They wouldn't!"

"You may reject this evidence," said the gentle, surgical voice. "Admittedly it is not conclusive. The Xoan might have lied. Or, even if he told the truth, the Kandemirians might still have launched an attack. Especially if somehow they learned about those bombs. For then the destruction of Earth would be absurdly simple. A few medium-power nuclear missiles, landing within a fair-sized geographical area, would touch off the supreme explosion . . . But Earth herself would nevertheless have provided the means."

Donnan covered his face and sobbed.

When he looked at them again, Wandwai had put the projector and spool away. "For the sake of surviving humans, Captain, as well as Monwaingi policy," the Resident murmured, "I trust you

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will hold this confidential. Now come, shall we discuss your further plans? Despite the ecological problems, I am sure a home can be made for you within our hegemony—"

"No," said Donnan.

"What?" This time Wandwai did blink.

"No. We're heading back to Vorlak. Our ship, the rest of our people—"

"Oh, they can come here. Monwaing will arrange everything with the Dragar."

"I said *no*. We have a war to finish."

"Even after Kandemir is proven probably innocent?"

"I don't accept your proof. Y-y-you'll have to trot out something more solid than a reel of film. I'm going to keep on looking . . . on my own account. Anyway, Kandemir did kill some of my crew. And ought to be stopped on general principles. And there's still the idea we had of making a Galaxy-wide splash. I'm going. Thanks for your . . . your hospitality, guv'nor. So long."

Donnan lurched from the room.

Ramri stared after him a minute, then started in pursuit. Wandwai, who had remained still except for slow puffs on his cigar, called: "Do you think it best we stop him?"

"No, honored Resident," Ramri answered. "It is necessary for him to depart. However, I am leaving too."

"Indeed? After so long an absence from home?"

"He may need me," Ramri said, and left.

XII

Who going through the vale of misery use it for a well: and the pools are filled with water.
They will go from strength to strength.
—The Book of Common Prayer

BLACK and mountainous, the ancestral castle of Hlott Luurs covered the atoll on which it was built and burrowed deep into the rock. Sheer walls of fused stone ended in watchtowers overlooking the fisher huts on two neighbor islets, and in missile turrets commanding the sky above. Today, as often at every latitude on Vorlak, that sky hung low. Smoky clouds tinged with bronze by the hidden sun flew on a wind that whipped the sea to gray-green restlessness.

When he stood up, Carl Donnan got a faceful of spindrift. The air was warm, but the wind whistled and the surf boomed with a singularly cold noise.

He braced his feet against roll and lurch as Ger Nenna changed course. "We must go in by the

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west gate," the scholar called. "None but Dragar and the Overmaster may use the north approach." His fur gleamed with salt water; he had removed his robes to keep them dry when the boat started off from Port Caalhova. Donnan stuck to his shabby coverall and a slicker.

Pretty overbearing type, that Hlott, the man thought. Oh, sure, he's entitled to be ceremonious—president of the Council and all that. And in times like these you can't blame him for not allowing any fliers but his into this area. And his refusal even to talk with me after I got back is within his rights. But when you add everything together, he's treating us humans like doormats and it has got to stop.

He put arms akimbo. The old Mauser would have been comforting on his hip today. But naturally, he wasn't allowed to bear weapons here. He wouldn't even have gotten this interview had it not been for Ger Nenna's repeated petitions.

They passed a few fisher craft, off which commoners dove like seals to herd schools detected by sonar beams into giant scoop drogues. A patrol boat set down on the water and the pilot bawled a challenge. Ger identified himself and was waved on. A clifflike wall loomed dead ahead. The portcullis was raised as Ger steered toward the entrance. Within, several boats lay docked in a basin. Ger made fast.

"HAVE you reconsidered your plan, Captain, as I requested?" he asked.

"Uh-huh," Donnan nodded. "But I'll stick with it."

"Have you fully understood how dangerous it is? A Draga, any Draga, is supreme within his own demesne. Hlott could kill you here. There would be no lawful redress, no matter how small and poor an aristocrat he was."

"But he is not small and poor," Donnan pointed out. "He's the boss of this planet. And there lies my chance." He shrugged. The bitterness that Ger had noticed and wondered about, ever since the *Hrunna* survivors returned from Katkinu, whetted his tone. "We're the ones who're poor, we humans. Nothing to lose. And that fact can also be turned into an asset."

Ger toweled himself more or less dry and slipped the plain black robe over his head. "In the Seven Classics of Voyen," he said anxiously, "one may read, 'Many desperations do not equal one hope.' Captain, you know I favor your cause. Not from charity, but on the dim chance that you may indeed bring this wretched war to an end. Only when the interstellar situation has become

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stable will there be any possibility of restoring—no, not the Eternal Peace; that is gone forever—but the true Vorlakka civilization. You must never believe these swaggering Dragar represent our inherent nature as a species."

"Lord, no." Donnan shucked his slicker and helped Ger tie an embroidered honorific sash. "In fact, pal, if the breakdown of your old universal state had *not* thrown up a warlord class, you'd be a pretty sorry lot. Ready? Let's go, then. Yonder guard is beginning to give us a fishy look."

They debarked and were frisked. Ger was searched nominally and with a ritual apology, Donnan like a criminal arrested for malicious hoodblinkery and aggravated conspiculation. He submitted without paying much heed. He was too busy rehearsing what— No, by God! A set speech was exactly the wrong approach. Marshal his facts, sure; but otherwise play by ear. Keeping cool was the main thing. He was about to walk a tightrope over a pit full of razor blades.

A servant ushered them down wet, ringing corridors, up ramps worn smooth by warlike generations, and so at last to a relatively small room. It had a transparent domed roof, the walls were brightly colored and furniture stood about. A solarium, Donnan guessed. The guide bowed low and went out. The door shut behind him, thick and heavy.

HLOTT LUURS was sprawled nude on a couch. The light from above rippled along his mahogany fur. He raised himself to one elbow and regarded them with chill eyes.

No one else was present, but a web-footed, long-fanged animal, tiger size, lay at his feet. A borren, Donnan recognized. It rumbled at him until Hlott clicked his tongue for silence.

Ger Nenna advanced and bent his head. "My captain," he greeted, "dare this worm express thanks for your graciousness in heeding his prayer, or should he accept it in silence as the winter earth accepts vernal sunshine?"

"If the honorable steersman truly wants to show gratitude," said Hlott dryly, "he can spare me any future time-wastings as silly as this."

"I beg leave to assure the President that the Terrestrial captain brings news of great import."

"Yes, he does." Hlott's gaze smoldered on Donnan. Briefly, teeth flashed white in his blunt muzzle. "But I've already heard that news, you see. A good destroyer thrown away at Mayast, together with Draga Olak Faarer's life, my kinsman. Kandemir handed the secret of the new paragrav detector, as the price for

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sparing the flotsam lives of a few Earthlings. That is the news. And now this creature not only has the insolence to return to Vorlak— he demands we put him in charge of still more operations! Be grateful to Ger Nenna, you. I'd have blasted every last wretch of your gang before now, had he not persuaded me otherwise."

Donnan sketched an obeisance. "My captain," he said, "you agreed yourself to let us try that raid, and you were told that success wasn't guaranteed. Trying to shift the whole blame on us would be a sneaking trick."

"What?" Hlott's hackles rose. He sat straight. The borren sensed his mood and got up too, tail lashing, throat like thunder.

Donnan didn't stop to be afraid. He dared not. He kept his words loud and metallic: "Thanks for finally agreeing to hear our side of the fiasco. If you really plan to listen to me. And you'd better. This affair hasn't weakened us as you think. We're stronger than before. By 'we' I mean the *Franklin*'s men; but we'll include Vorlak if you want."

The borren started toward him. Hlott called it back with a curt order. I gauged him right, then, Donnan thought, beneath his own pulsebeat and sweat. He's not so stuck on himself that he won't stop to look at facts shoved under his nose. He's not stupid at all, really; just raised in a stupid milieu.

He won't kill me simply because he gets peeved. . . . No. He'll have excellent logical reasons.

The Draga shivered with self-restraint. "Speak, then," he said in a strangled voice. "Explain how Kandemir's possessing the new detector strengthens anyone except Tarkamat."

"THOSE detectors are prototypes, my captain," said Donnan, moderating his tone. "At best, a few enemy ships may now have handmade copies. It'll take months to get them into real production. So unless we let the stalemate drag on, we haven't lost much on that account.

"The Kandemirians also have a glimpse of the theory behind the detectors. But a very partial glimpse. And they'll need time to digest their knowledge, time to see the implications and develop the possibilities. We — Arnold Goldspring and his helpers— have been thinking about this subject, off and on, for close to three years while we cruised around exploring. We've given it really concentrated attention since we returned to this cluster.

"When Goldspring and I arrived back at Vorlak from Katkinu, we found that his associates who'd stayed behind in the

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Franklin had not been idle. Thanks to Ger Nenna, who arranged access to computers and other high-powered research tools, they'd gone a long ways toward developing half a dozen new applications. It's a case of genuine scientific breakthrough. Inventions based on Goldspring's principle are going to come thick and fast for a while. And we've got the jump on everybody else."

"I have been told about theoretical designs and laboratory tests," Hlott said disgustedly. "How long will it take to produce something that really works?"

"Not long, my captain," Donnan said. "That is, if a massive scientific-technological effort can be mounted. If the best Vorlakka and allied minds can work together. And that's the real technique we Earthlings have got that you don't. A feudal society like yours, or a nomadic culture like Kandemir, or a coalition of fragments like Monwaing, isn't set up to innovate on purpose. We can tell you how to organize a development project. In less than a year, we can load you for . . . for borren . . . and break the deadlock."

"So you say," Hlott growled. "Your record to date hardly justifies belief."

"Most honored captain," Ger begged, "I have inspected the work of these people. My feeble powers were insufficient to grasp their concepts. I could only gape in awe at what was demonstrated. But scholars in the physical sciences, who have studied more deeply, assure me—"

"I don't give a curse in nonexistence what they assure you, honorable steersman," Hlott answered. "If it pleases them to tinker with a new idea, let them. Something worthwhile may or may not come from it. But I am responsible for the survival of Vórlak as an independent world! And I am not going to gamble half our resources on as crazy an effort as this, masterminded by a mouthful of planetless lunatics. Go!"

Ger wrung his hands. "Noble master—"

Hlott rose to his feet. "Go," he shouted "Before I chop you both in pieces!"

The borren snarled and crouched.

"But the noble President of Council does not realize—"

Donnan waved Ger back. "Never mind, pal," he said. "I know you hate to come right out and say this. But it's got to be done."

He planted himself solidly before the Draga and stated: "You must know I've got the backing of several Councillors. They liked what we showed them."

"Yes." Hlott relaxed enough to

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snort a laugh. "I have heard. Praalan, Seva, Urlant. The weakest and most impressionable members of the entire Draga class. What does that foolishness mean?"

"Exactly this, my captain." Donnan's lips bent into a sort of smile He ticked the points off on his fingers. "One: they agree with me that if the stalemate drags on much longer, Kandemir is going to win for sure. The nomad empire has more resources in the long run. Two: once equipped with the new detectors, and the prospect of still fancier gadgets—remember, Kandemir's vassals include sedentary industrial cultures that *do* know how to organize weapons development—Tarkamat is going to come out looking for a showdown. So we haven't got very much time in any case. Three: if we prepare for it, we, the anti-Kandemirian alliance, can force the showdown ourselves, with a pretty fair chance of winning. Four: this is so important that Praalan and Company can't continue to support a President of the Council too bullheaded to realize the simple facts."

MUSCLES bunched and knotted along the warlord's body. Almost, the borren went for Donnan's throat. Hlott seized its neck and expended enough temper restraining that huge mass to retort, slit-eyed but self-possessed:

"Ah, you have gone behind my back, then, and awakened intrigues against me, eh? That shall certainly be repaid you."

"I couldn't help going behind your back," Donnan snapped. "You kept it turned on me, in spite of my loudest hollering."

"Praalan, Seva and Urlant! What can they accomplish? Let them try to force an election. Just let them dare!"

"Oh, they won't by themselves, my lord. I talked 'em out of that. Persuaded them they don't, none of them, have the following — or the brains and toughness — to boss those roughneck admirals. They wouldn't last a week. However . . they do have *some* resources. In cahoots, their power is not negligible. So if they were to join forces with Yenta Saeter, who is very nearly as strong as you—"

"What!"

"Got the idea? My three chums will support Yenta because I've talked them into the idea that it's more important what weapons Vorlak can get than what master Vorlak has. Yenta doesn't think too much of me and my schemes, but he's agreed to organize my project once he gets the Presidency, in return for the help of my three Dragar."

Hlott cursed and struck. Don-

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nan sidestepped the blow The borren glided forward. Donnan closed with Hlott. He didn't try to hurt the noble, but he went into a clinch. The unhuman body struggled to break loose. Cable-strong arms threw Donnan from side to side. Teeth sought his shoulder.

"Easy, friend. Easy!" Donnan gasped. As the borren lunged, the man forced Hlot around as a shield. The great jaws nearly closed on the Draga's leg. The borren roared and drew back.

"Let's not fight, my captain," the Terrestrial said. His teeth rattled with being shaken. He bit his tongue and choked on an oath. "If . . . wait, call off your pet, will you? If I meant you any harm, would I . . . have come here . . . and told you?"

Momentarily balked, the borren turned on Ger, who scuttled around a couch. *"Farlak!"* Hlott yelled. The beast flattened its ears and snarled. Hlott shouted again. It lay down stiff and reluctant.

DONNAN let go, staggered to a couch, sat down and panted. "My . . my captain . . . is strong as a devil," he wheezed, rather more noisily than he had to. "I couldn't . . . have held out . . another minute."

A flicker of smugness softened the wrath on the lutrine face. Hlott said frigidly, "Your—presumption deserves a very slow death."

"Pardon me, my captain," Donnan said. "You know I'm not up on your customs. Back home, in my country, one person was pretty much equal to another. I can't remember what's good manners in a society as different as this."

He rose again. "I didn't come to threaten you or any such thing," he continued, feeling how big a liar he was. "Let's say I just wanted to warn you. Let you know what the sentiments of your colleagues are. I'd hate to see our side lose a leader as brilliant as yourself. If you'd only reconsider this one question of policy, you could swing back Seva, Urlant and Pralan to your side. And—uh—" he laid a finger alongside his nose and winked— "if this move were made precisely right, the honorable Yenta could be enticed out on a nice breezy limb . . . and suddenly discover he was alone there, and you stood behind him with a bucksaw."

Hlott poised in silence. Donnan could almost watch the fury drain from him and the calculation rise. Muscle by muscle, the human allowed himself to relax. He'd probably won his case, at the last moment.

Practical politics was another art which had been more highly

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developed on Earth than it was here.

XIII

THE BATTLE OF BRANDOBAR

Annotated English version

TO the literary historian, this ballad is notable as the first important work of art (as opposed to factual records, scientific treatises or translations from planetary languages) composed in Uru. However, the student of military technics can best explain various passages which, couched in epical terms, convey the general sense but not the details.

The naval engagement in question was fought near the Brandobar Cluster, an otherwise undistinguished group of stars between Vorlak and Mayast. On the one side was the alliance of Vorlak, Monwaing and several lesser races. Secret demonstrations of new weapons, combined with indignation at the ruin of Earth, had induced a number of hitherto neutral planets to declare war on Kandemir. Opposed to them was the Grand Fleet of the nomads, which included not only their clan units but various auxiliaries recruited from non-Kandemirian subjects of their empire. Their force was numerically much stronger than the attackers.

Three kings rode out on the way of war
(The stars burn bitterly clear):
Three in league against Tarkamat,
Master of Kandemir.

And the proudest king, the Vorlak lord,
(The stormwinds clamor their grief)
Had been made the servant in all but name
Of a planetless wanderer chief.

And the secondmost king was a wingless bird
(A bugle: the gods defied!)
Who leagued at last with the Vorlak lord
When the exiles were allied.

And the foremost king in all but name
(New centuries scream in birth)
Was the captain of one lonely ship
That had fled from murdered Earth.

For the world called Earth was horribly slain
(The stars burn bitterly clear)
By one unknown; but the corpse's guards
Were built on Kandemir.

The Earthlings fled— to seek revenge

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(The stormwinds clamor their grief)
For ashen homes and sundered hopes
First seen in unbelief.

And haughty Vorlak spoke to them
(A bugle: the gods defied!):
"Kandemir prowls beyond our gates.
Can ye, then, stay the tide?"

And the Monwaing wisemen spoke to them
(New centuries scream in birth):
"Can ye arm us well, we will league with you,
Exiles from shattered Earth."

And the wanderer captain told the kings
(The stars burn bitterly clear):
"I have harnessed and broken to my will
Space and Force and Fear."

Tarkamat, Master of Kandemir,
(The stormwinds clamor their grief)
Laughed aloud: "I will hurl them down
Like a gale-blown autumn leaf."

And he gathered his ships to meet the three
(A bugle: the gods defied!)
As an archer rattles his arrow sheaf
And shakes his bow in pride.

Forth from their lairs, by torchlight suns,
(New centuries scream in birth)
The nomad ships came eager to eat
The wanderers from Earth.

And hard by a cluster of youthful suns
(The stars burn bitterly clear)
Known by the name of Brandobar,
They saw the enemy near.

And the three great kings beheld their foe
(The stormwinds clamor their grief)
With half again the ships they had,
Like arrows in a sheaf.

"Now hurl your vessels, my nomad lords,
(A bugle: the gods defied!)
One single shattering time, and then
Their worlds we shall bestride."

"Sleep ye or wake ye, wanderer chief,
(New centuries scream in birth)
That ye stir no hand while they seek our throats,
You murderers of Earth?"

Militechnicians can see from the phrasing alone, without consulting records, that the allied fleet must have proceeded at a

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high uniform velocity— free fall —in close formation. This offered the most tempting of targets to the Kandemirians, whose ships had carefully avoided building up much intrinsic speed and thus were more maneuverable. Tarkamat moved to englobe the allies and fire on them from all sides.

"Have done, have done, my
comrades twain.
(The stars burn bitterly clear)
Mine eyes have tallied each
splinter and nail
In yonder burning spear.

"Let them come who slew my
folk.
(The stormwinds clamor their
grief)
We wait for them as waits in a
sea
The steel-sharp, hidden reef."

The reference here is, of course, to the highly developed interferometric paragravity detectors with which the whole allied fleet was equipped, and which presented to the main computer in their flagship a continuous picture of the enemy dispositions. The nomads had some, too, but fewer and of a less efficient model.

Now Kandemir did spurt so close
(A bugle: the gods defied!)
They saw his guns and missiles
plain
Go raking for their side.

The exile captain smiled a smile
(New centuries scream in birth)
And woke the first of the
wizardries
Born from the death of Earth.

Then Space arose like a wind-
blown wave
(The stars burn bitterly clear)
That thunders and smokes and
tosses ships
Helpless to sail or steer.

And the angry bees from the
nomad hive
(The stormwinds clamor their
grief)
Were whirled away past Brando-
bar
Like a gale-blown autumn leaf.

This was the first combat use of the space distorter. The artificial production of interference phenomena enabled the allied craft to create powerful repulsion fields about themselves, or change the curvature of the world lines of outside matter — two equivalent verbalizations of Goldspring's famous fourth equation. In effect, the oncoming enemy missiles were suddenly pushed to an immense distance, as if equipped with faster-than-light engines of their own.

Tarkamat recoiled. That is, he allowed the two fleets to inter-

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penetrate and pass each other. The allies decelerated and re-approached him. He acted similarly. For, in the hours that this required, his scientists had pondered what they observed. Already possessing some knowledge of the physical principles which underlay this new defense, they assured Tarkamat that it must obey the conservation-of-energy law. A ship's power plant could accelerate a missile away, but not another ship of comparable size. Nor could electromagnetic phenomena by much affected by the new equipment.

Tarkamat accordingly decided to match velocities and slug it out at short range with his clumsy but immensely destructive blaster cannon. He would suffer heavy losses, but the greater numbers at his command made victory seem inevitable.

Tarkamat, Master of Kandemir,
(A bugle: the gods defied!)
Rallied his heart. "Close in with them!
Smite them with fire!" he cried.

The nomad vessels hurtled near
(New centuries scream in birth)
And the second wizardry awoke,
Born from the death of Earth.

Then Force flew clear of its iron sheath.
(The stars burn bitterly clear)
Remorseless lightnings cracked and crashed
In the ships of Kandemir.

And some exploded like bursting suns
(The stormwinds clamor their grief)
And some were broken in twain, and some
Fled shrieking unbelief.

Over small distances, such allied vessels as there had been time to equip with it could use the awkward, still largely experimental, but altogether deadly space-interference fusion inductor. The principle here was the production of a non-space band so narrow that particles within the nucleus itself were brought into contiguity. Atoms with positive packing fractions were thus caused to explode. Only a very low proportion of any ship's mass was disintegrated, but that usually served to destroy the vessel. More than half the Kandemirian fleet perished in a few nova-like minutes.

Tarkamat, unquestionably one of the greatest naval geniuses in galactic history, managed to withdraw the rest and re-form beyond range of the allied weapon. He saw that— as yet— it was too restricted in distance to be effective against a fortified planet, and ordered a retreat to Mayast II.

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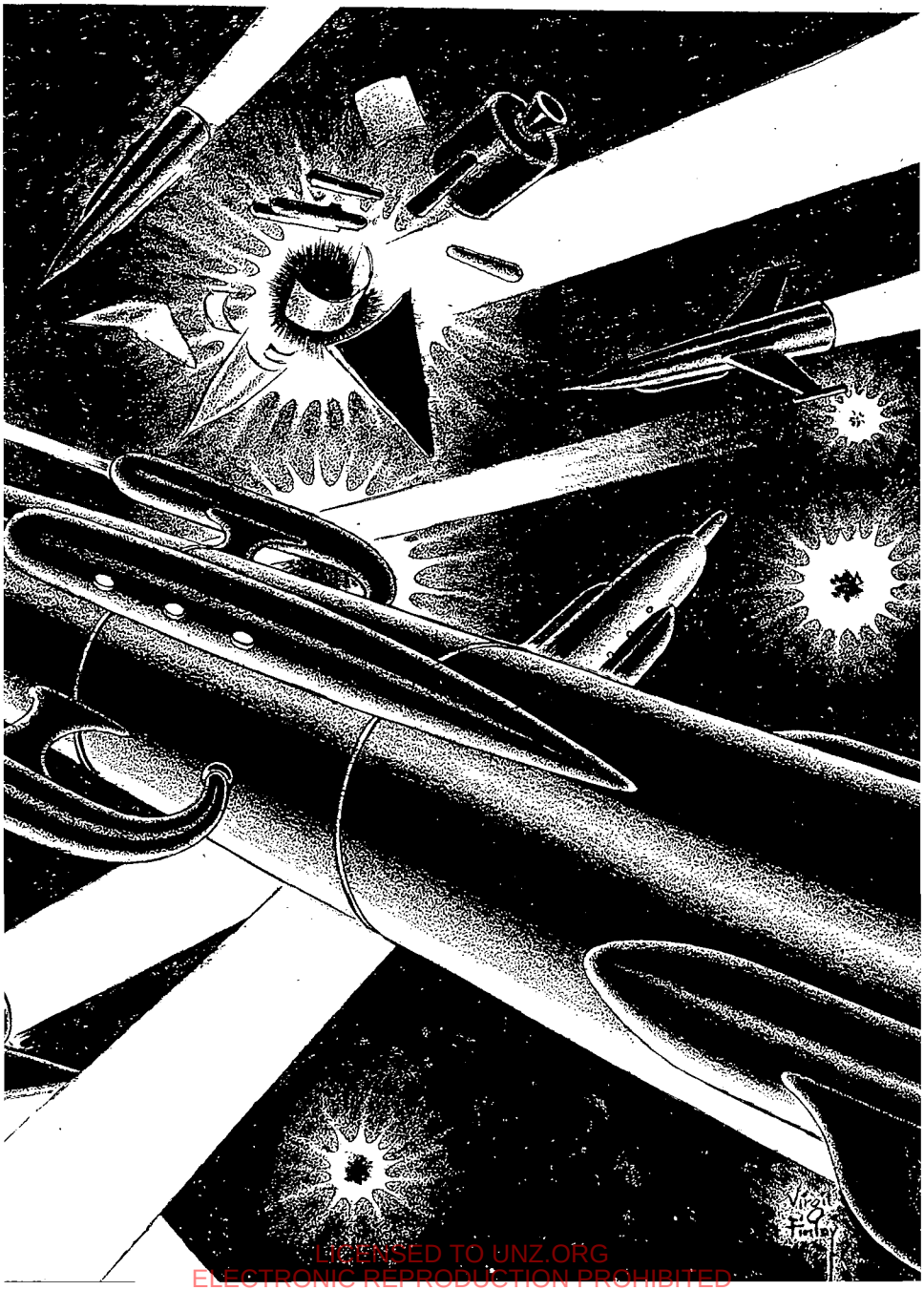

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Tarkamat, Master of Kandemir,
(A bugle: the gods defied!)
Told his folk, "We have lost this day,
But the next we may abide.

"Hearten yourselves, good nomad lords.
(New centuries scream in birth)
Retreat with me to our own stronghold.
Show now what ye are worth!"

The third of those wizardries awoke
(The stars burn bitterly clear)
Born from the death of Earth. It spoke,
And the name of it was Fear.

For sudden as death by thunderbolt,
(The stormwinds clamor their grief)
Ringing within the nomad ships
Came the voice of the exile chief.

Tarkamat, Master of Kandemir,
(New centuries scream in birth)
Heard with the least of his men the words
Spoken from cindered Earth.

On the relatively coarse molecular level, the space-interference inductor was both reliable and long-range. Carl Donnan simply caused the enemy hulls to vibrate slightly, modulated this with his voice through a microphone, and filled each Kandemirian ship with his message.

"We have broken ye here by Brandobar.
(The stars burn bitterly clear)
If ye will not yield, we shall follow you
Even to Kandemir.

"But our wish is not for ashen homes,
(The stormwinds clamor their grief)
But to make you each freeman once again
And not a nomad fief.

"If ye fight, we will hurl the sky on your heads.
(A bugle: the gods defied!)
If ye yield, we will bring to your homes and hearts
Freedom to be your bride.

"Have done, have done; make an end of war
(New centuries sing in birth)
And an end of woe and of tyrant rule—
In the name of living Earth!"

TARKAMAT reached a cosmic interference fringe and went into faster-than-light retreat. The allies, though now numerically superior, did not pursue. They doubted their ability to capture Mayast II. Instead, they proceeded against lesser Kandemi-

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rian outposts, taking these one by one without great difficulty. Mayast could thus be isolated and nullified.

The effect of Donnan's words was considerable. Not only did this shockingly unexpected voice from nowhere strike at the cracked Kandemirian morale; it offered their vassals a way out. If these would help throw off the nomad yoke, they would not be taken over by the winning side, but given independence, even assistance.

There was no immediate overt response; but the opening wedge had been driven. Soon allied agents were being smuggled onto those planets, to disseminate propaganda and organize underground movements along lines familiar to Earth's history.

Thus far the militechnic commentator. But the literary scholar sees more in the ballad. Superficially it appears to be a crude, spontaneous production. Close study reveals it is nothing of the sort. The simple fact that there had been no previous Uru poetry worth noticing would indicate as much. But the structure is also suggestive. The archaic imagery and exaggerated, often banal descriptions appeal, not to the sophisticated mind, but to emotions so primitive they are common to every spacefaring race. The song could be enjoyed by any rough-and-ready spacehand, human, Vorlakka, Monwaingi, Xoan, Yannth, or whatever—including members of any other civilization-cluster where Uru was known. And, while inter-cluster traffic was not large nor steady, it did take place. A few ships a year did venture that far.

Moreover, while the form of this ballad derives from ancient European models, it is far more intricate than the present English translation can suggest. The words and concepts are simple; the meter, rhyme, assonance, and alliteration are not. They are, indeed, a jigsaw puzzle, no part of which can be distorted without affecting the whole.

Thus the song would pass rapidly from mouth to mouth, and be very little changed in the process. A spacehand who had never heard of Kandemir or Earth would still get their names correct when he sang what to him was just a lively drinking song. Only those precise vocables would sound right.

So, while the author is unknown, *The Battle of Brandobar* was obviously not composed by some folkish minstrel. It was commissioned, and the poet worked along lines carefully laid down for him.

This was, in fact, the *Benjamin Franklin's* message to humans throughout the galaxy.

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XIV

Then I saw that there was a way to hell, even from the gates of heaven.

—Bunyan

NO, Sigrid Holmen told herself. Stop shivering, you fool. What is there to be afraid of?

Is it that . . . after five years . . . this is the first time I have been alone with a man? Oh, God, how cold those years were!

He wouldn't do anything. Not him, with the weather-beaten face that crinkled when he smiled, and his hair just the least bit grizzled, and that funny slow voice. Or even if he did—

The thought of being grasped against a warm and muscular body made her heart miss a beat. They weren't going to wait much longer, the crews of *Europa* and *Franklin*. The half religious reverence of the first few days was already waning, companionships had begun to take shape, marriages would not delay. To be sure, even after the casualties the Americans had suffered in the Kandemirian war, they outnumbered the women. The sex ratio would get still more lopsided if —no, *when!*—more ships came in from wherever they now were scattered. A girl could pick and choose.

Nevertheless, murmured Sigrid's awareness, I had better choose mine before another sets her cap for him. And he wanted to see me today, all by myself . . .

The warmth faded in her. She couldn't be mistaken about the way Carl Donnan's eyes had followed each motion she made. But something else had been present as well, or why should his tone have gone so bleak? She had sat there in the ship with the ranking officers of both expeditions, exchanging data, and described how she boarded the Kandemirian missile, and seen his face turn stiff. Afterward he drew her aside; low-voiced, almost furtive, he asked her to visit him confidentially next day.

But why should I be afraid? she demanded of herself again, angrily. We are together, the two halves of the human race. We know now that man will live; there will be children and hearthfires on another Earth—in the end, on a thousand or a million other Earths.

KANDEMIR is beaten. They have not yet admitted it, but their conquests have been stripped from them, their provinces are in revolt, they themselves requested the cease-fire which now prevails. Tarkamat spars at the conference table as bravely and skillfully as ever he did in battle, but the whole cluster

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knows his hope is forlorn. He will salvage what he can for his people, but Kandemir as an imperial power is finished.

Whereas we, the last few Homines Sapientes, sit in the councils of the victors.

Vorlak and Monwaing command ships by the thousands and troops by the millions, but they listen to Carl Donnan with deepest respect. Nor is his influence only moral. The newly freed planets, knowing that singly they can have little to say about galactic affairs, have been deftly guided into a coalition—loose indeed, but as close-knit as any such league can be among entire worlds. Collectively, they are already a great power, whose star is in the ascendant. And . . . their deliberative assembly is presided over by a human.

Why am I afraid?

She thrust the question away (but could not make herself unaware of dry mouth and fluttering pulse) as she guided her aircar onto the landing strip. Long, shingle-roofed log buildings formed a square nearby. Trees, their leaves restless in a strong wind, surrounded three sides. The fourth looked down the ridge where Donnan's headquarters stood, across the greennesses of a valley, a river that gleamed like metal and the blue upward surge of hills on the other horizon. This was not Earth, this world called Varg, and the area Donnan occupied—like other sections lent the humans by grateful furry natives off whom the nomad overlordship had been lifted—the area was too small to make a home.

But until men agreed on what planet to colonize, Varg was near enough like Earth to ease an old pain. When Sigrid stepped out, the wind flung odors of springtime at her.

Donnan hurried from the portico. Sigrid started running to meet him, checked herself, and waited with head thrown back. He had remarked blonde hair was his favorite, and in this spilling sunlight—

He extended a hand, shyly. She caught it between her own, felt her cheeks turn hot but didn't let go at once.

"Thanks for coming, Miss Holmen," he mumbled.

"Vas nothing. A pleasure." Since his French was even rustier than her English, they used the latter. Neither one considered a nonhuman language. She liked his drawl.

"I hope . . . the houses we turned over to you ladies . . . they're comfortable?"

"Oh, *ja, ja.*" She laughed. "Every time ve see a man, he asks us the same."

"Uh . . . no trouble? I mean, you know, some of the boys are

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kind of impetuous. They don't mean any harm, but—"

"VE have impetuous vuns too." They released each other. She turned in confusion from his gray gaze and looked across the valley. "How beautiful a view," she said. "Reminds me about Dalarna, v'en I vas a girl. Do you live here?"

"I bunk here when I'm on Varg, if that's what you mean, Miss Holmen. The other buildings are for my immediate staff and any visiting firemen. Yeah, the view is nice. But . . . uh . . . didn't you like that planet—Zatlokopa, you call it?— the one you lived on, in the other cluster. Captain Poussin told me the climate there was fine."

"Vell, I say nothing against it. But thank God, ve vere too busy to feel often how lonely it vas for us."

"I, uh, I understand you were doing quite well."

"Yes. Vuns ve had learned, v'at you say, the ropes, ve got rich fast. In a few more years, Terran Traders, Inc., would have been the greatest economic power in that galactic region. Ve could have sent a thousand ships out looking for other survivors." She shrugged. "I am not bragging. Ve had advantages. Such as necessity."

"Uh-huh. What a notion!" He shook his head admiringly. "We both had the same problem, how to contact other humans and warn them about the situation. Judas priest, though, how much more elegant your solution was!"

"But slow," she said. "Ve vere not expecting to be able to do much about it for years. The day Yael Blum came back from Yotl's Nest and told v'at she had heard, a song being sung by a spaceman from another cluster—and ve knew other humans vere alive and ve could safely return here to them—No, there can only be two such days in my lifetime."

"What's the other one?"

She didn't look at him, but surprised herself by how quietly she said, "V'en my first-born is laid in my arms."

For a while only the wind blew, loud in the trees. "Yeah," Donnan said at last, indistinctly, "I told you I bunked here. But it's not a home. Couldn't be, before now."

As if trying to escape from too much revelation, she blurted, "Our problems are not ended. V'at vill the men do that don't get . . . get married?"

"That's been thought about," he answered, unwilling. "We, uh, we should pass on as many chromosomes as possible. That is, uh, well, seems like—"

Her face burned and she held her eyes firmly on the blue hills. But she was able to say for him:

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"Best that in this first generation, each voman have children by several different men?"

"Uh—"

"Ve discussed this too, Carl, v'ile the *Europa* vas bound here. Some among us, like . . . oh . . . my friend Alexandra, for vun . . . some are villing to live with any number of men. Polyandry, is that the vord? So that solves part of the problem. Others, like me—vell, ve shall do v'at seems our duty to the race, but ve only vant a single real husband. He . . . he vill have to understand more than husbands needed to understand on Earth."

Donnan caught her arm. The pressure became painful, but she wouldn't have asked him to let go had it been worse.

Until, suddenly, he did. He almost flung her aside. She turned in astonishment and saw he had faced away. His head was hunched between his shoulders and his fists were knotted so the knuckles stood white.

"Carl," she exclaimed. "Carl, *min käre,* v'at is wrong?"

"We're assuming," he said as if strangled, "that the human race ought to be continued."

She stood mute. When he turned around again, his features were drawn into rigid lines and he regarded her as if she were an enemy. His tone stayed low, but shaken: "I asked you here for a talk . . . because of something you said yesterday. I see now I played a lousy trick on you. You better go back."

She took a step from him. Courage came. She stiffened her spine. "The first thing you must come to understand, you men," she said with a bite in it, "is that a voman is not a doll. Or a child. I can stand as much as you."

He stared at his boots. "I suppose so," he muttered. "Considering what you've already stood. But for three years, now, I've lived alone with something. Most times I could pretend it wasn't there. But sometimes, lying awake at night . . . Why should I wish it onto anyone else?"

HER eyes overflowed. She went to him and put her arms about his neck and drew his head down on her shoulder. "Carl, you big brave clever fool, stop trying to carry the universe. I vant to help. That's v'at I am for, you silly!"

After a while he released her and fumbled for his pipe. "Thanks," he said. "Thanks more than I can tell."

She attempted a smile. "Th-th-the best thanks you can give is to be honest vith me. I'm curious, you know."

"Well—" He filled the pipe, ignited the tobacco surrogate and fumed forth clouds. Hands

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jammed in pockets, he started toward the house. "After all, the item you mentioned gave me hope my nightmare might in fact be wrong. Maybe you won't end up sharing a burden with me. You might lift it off altogether." He paused. "If not, we'll decide between us what to do. Whether to tell the others, ever, or let the knowledge die with us."

She accompanied him inside. A long, airy room, paneled in light wood, carelessly jammed with odd souvenirs and male impedimenta, served him for a private office. She noticed the bunk in one corner and felt the blood mount in head and breast. Then the lustrous blue form of a Monwaing arose and fluted politely at her. She didn't know whether to be grateful or to swear.

"Miss Holmen, meet Ramri of Tantha," Donnan said. "He's been my sidekick since we first left Earth, and my right hand and right eye since we got back. I figured he'd better sit in on our discussion. He probably knows more about this civilization-cluster than any other single being."

The delicate fingers felt cool within her own. "Welcome," said the avian in excellent English. "I cannot express what joy your ship's arrival has given me. For the sake of my friends, and your race, and the entire cosmos."

"Takkar sa mycket," she whispered, too moved to use any but her father's language.

Donnan gave her a chair and sat down behind the desk. Ramri went back to his sitting-frame. The man puffed hard for a moment before he said roughly:

"The question we have to answer somewhere along the line, or we'll never know where we stand or what to expect, is this. Who destroyed Earth?"

"V'Y . . . Kandemir," Sigrid replied, startled. "Is there any doubt?"

"Kandemir has denied it repeatedly. We've ransacked captured archives and interrogated prisoners for a good two years now, ever since Brandobar, without finding any conclusive proof against them. Well, naturally, you say, that don't signify. Knowing how such an act would inflame public opinion against them, they'd take elaborate security precautions. Probably keep no written records whatsoever about the operation, and use hand-picked personnel who'd remain silent unto death. You know how strong clan loyalty is in their upper-echelon families. So Kandemir might or might not be guilty, as far as that goes."

"But the Solar System vas guarded by their missiles!" she protested.

"Yeah," Donnan said. "And

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isn't that a hell of a clumsy way to preserve the secret? Especially when those missiles were so programmed as to be less than maximum efficient. This is not mere guesswork, based on the chance that the *Europa* and the *Franklin* both managed to escape. Three months ago, I sent an expedition to the Solar System equipped with our new protective gizmos. Arn Goldspring was in charge, and what he can't make a piece of apparatus do isn't worth the trouble. His gang disarmed and captured several missiles, and dissected them down to the last setscrew. They were standard Kandemirian jobs. No doubt about that. But every one had been clumsily programmed. Doesn't that suggest somebody was framing Kandemir?"

"Framing?" Sigrid blinked. "V'at . . . oh, yes. I see. Somevun vanted to make Kandemir seem guilty." She frowned. "Yes, possible. Though v'at ve found v'en ve boarded that vun missile suggests—" she ran out of words.

"That's what I wanted to talk about," said Donnan. "What you found, by a lucky chance, was unique. No such clue turned up in any that Goldspring examined. Did you bring your notes along as I asked?"

She handed them to him. He stared at them while silence stretched. Ramri walked around and looked over his shoulder.

"WHAT d'you make of this?" Donnan asked at length.

"One set of symbols are Kandemirian numerals, of course," Ramri said. "The other . . . I do not know. I may or may not have seen them before. They look almost as if once, long ago, I did. But even in a single cluster, there are so many languages, so many alphabets—" His musings trailed off. Very lightly, he stroked a hand across Donnan's forehead. "Do not let this fret you, Carl-my-friend," he murmured. "Over and over I have told you, what you learned on Katkinu is not the end of all faith. A mistake only. Anyone, any whole race, let alone a few bewildered members of a race, anyone can err. When will you listen to me, and forget what you saw?"

Donnan brushed him away and looked hard at Sigrid. "What did you think of this clue, you ladies?" he asked. "You had three years to mull it over."

"Ve did not think much," she admitted. "There vas so much else to consider. Everything ve had lost and everything ve must do to regain our hopes. Ve recognized the numerals. Ve thought maybe the other symbols vere letters. You know, in some obscure Kandemirian alphabet, different from the usual Erzhuat. Just as

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Europe, Russia, Greece, Israel, China used different languages and alphabets but the same Arabic numerals. Ve guessed probably these vere notes scribbled for his own guidance by some vorkman helping adjust the missile, who vas not too familiar vith the mechanism."

"There are only six distinct unknown symbols," Donnan grunted. "Not much of an alphabet, if you ask me." He frowned again at the paper.

"They might then be numbers," Ramri offered. "The workman may not have been Kandemirian at all. He could have belonged to a subject race. If the Kandemirians used vassals for the job who were never told what their task was, never even knew what planetary system they were in, that would increase secrecy."

"But the missiles themselves, you dolt!" Donnan snarled. "*They* were the giveaway. What use these fancy precautions if anyone who saw a Mark IV Quester barreling toward him, and got away, could tell the Galaxy it was Kandemirian?"

Ramri left the desk, stared at the floor, and said with sorrow, "Well, you force me, Carl. This was explained to you on Katkinu."

Sigrid watched the paper on the desk as if she could almost read something in those scrawls that it was forbidden to read. "Ve didn't think much about this," she said helplessly. "For vun thing, none of us knew much about Kandemir anyvay, not even Captain Poussin. And with so much else— Our notes lay forgotten in the ship. Until now."

Realization stabbed home. She gasped, summoned her strength and said harshly, "All right. You have fiddled around plenty long. V'at did they show you on Katkinu?"

Donnan met her gaze blindly. "One more question," he said without tone. "Seems I heard . . . yeah, you've got a Yugoslav and an Israeli aboard, haven't you? Either of them know anything about plans to emigrate from Earth? Were either the Balkan or the Arab countries—the Israelis would be bound to have some idea what the Arabs were up to—either alliance building more ships? Recruiting colonists of any sort?"

"NO," Sigrid said. "Nothing like that. No."

"You positive?"

"Yes. Surely. Remember, I vas concerned in the pan-European project. I saw shipyards myself, read the journals, heard the gossip. Maybe some very small ships vas being made secretly. But something big enough to take many people to another planet,

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no. Not at the time ve left. And I don't think there vas time afterward to build much, before the end came."

"No. There wasn't." Donnan shook himself. "Okay," he said quickly, "that's clue number two you've given me. However fine it would be to have more people alive, I admit I was hoping for the answer you gave. How I was hoping!

"You see, on Katkinu I was shown a film made by the Monwaingi intelligence service. An interview with a trader from Xo, who admitted his combine had sold the Balkan and the Arab alliances something that military theorists once labeled a doomsday weapon. The ultimate deterrent." His voice grew saw-edged. "A set of disruption bombs, able to sterilize the planet. Armed to go off automatically in the event of an attack on the countries possessing same. Got the idea? The Monwaingi believe Earth was not murdered. They think Earth committed suicide."

Sigrid sagged in her chair. A dry little sound came from her, nothing else was possible. Donnan slammed the desk with his fist. "You see?" he almost shouted. "That's what I didn't want to share. Monwaing was willing to keep the secret. Why shouldn't I? Why let my friends wonder too what race of monsters they belong to? Wonder what's the use of keeping alive, then force themselves to go through the motions anyway. You see?"

He checked himself and went on more quietly: "I've tried to investigate further. Couldn't get any positive information one way or the other from Xo, in spite of some very expensive espionage. Well, naturally, they'd burn their own records of such a transaction. If you sold someone a gun and he turned out to be a homicidal maniac, even if you hadn't known he was, you wouldn't want to admit your part. Would you? Who'd ever come to your gunshop again?

"How do we explain those Kandemirian missiles? Well, Monwaing thinks Kandemir did plant those, but only after the deed was done. To stake a claim. The Solar System is strategically located: outflanks the Monwaingi stars. And when Earth has cooled, it'll be colonizable with less difficulty than many other planets would give. As for why the missiles are so inefficient, they are intended as a warning rather than an absolute death trap.

"Please note that Kandemir has never denied doing this much. Nor affirmed it, to be sure. But they did announce in their arrogant way that come the proper time, they would exercise rights of salvage. And meanwhile they wouldn't be responsible for acci-

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dents to anyone entering the Solar System."

Donnan rose. His chair clattered to the floor. He ignored it, strode around to Sigrid hunkered down before her and took her hands. "Okay," he said, suddenly gentle. "You know the worst. I think we three, here and now, have got all the clues anyone will ever have for certain. Maybe we can figure out who the enemy is. Or was. Buck up, kid. We've got to try."

XV

I tell you naught for your comfort,
Yea, naught for your desire,
Save that the sky grows darker yet
And the sea rises higher.
—Chesterton

As if thrusting away an attacker, she sprang to her feet. Donnan went over on his rear. "Oh," she exclaimed. "I'm so sorry." She bent to help him rise. He didn't require her assistance but used it anyway. Their faces came close. He saw her lips stir. Suddenly his own quirked upward.

"We needed some comic relief," he said. His arm slid down to her waist, lingered there a moment; she laid her head on his shoulder as fleetingly; they separated, but he continued to feel where they had touched.

Not quite steadily, he went back to his desk, took his pipe and rekindled it.

"I think now I can stand any answer we may find," he said low.

Color came and went beneath her skin. But she spoke crisply: "Let us list the possibilities. Ve have Kandemir and Earth herself as suspects. But who else? Vorlak? I do not vant to slander an ally, but could . . . v'at you call him . . . Draga Hlott, for some reason—"

"No," Donnan said. He explained about the treaty with Russia. "Besides," he added, "as the war developed, I got more and more pipelines into the Vorlakka government. Ger Nenna, one of their scholar-administrator class, was particularly helpful. The Dragar aren't any good at double-dealing. Not only had they no reason to attack Earth—contrariwise!—but if they ever did, they wouldn't have operated under cover. And if by some chance they had pulled a sneak assault, they wouldn't have been able to maintain the secret. No, I cleared them long ago."

"Similar considerations apply to the lesser spacefaring worlds, like Yann and Unya," Ramri said. "They all feared Kandemir. While the Soviet-Vorlakka agreement was not publicized, everyone

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knew Earth was as natural a prey for the nomads as any other planet and, if the war lasted, would inevitably become involved on the allied side to some degree. Even were they able, no one would have eliminated a potential helper."

"I checked them out pretty thoroughly with espionage just the same," Donnan said bluntly. "They're clean. The only alternatives are Kandemir and suicide."

Sigrid twisted her hands together. "But suicide does not make sense," she objected. "It is not only that I do not vant to believe it. In some vays it vould be more comfortable to."

"Huh?" Both Donnan and Ramri stared.

"*Ja,* v'y not? Then ve vould know Earth's killers are dead and cannot threaten us any more."

Donnan raised his shoulders and spread his hands. "I'd forgotten women are the cold-blooded, practical sex," he muttered.

"NO, but look, Carl. Let us suppose the doomsday veapon vas actually installed. Then v'y did no country try to plant some people off Earth? Even if, let us say, vuns she had this last resort . . . even if Yugoslavia expected no vun vould dare attack her—still, Yugoslavia vould have been in a better bargaining position yet vith people on other planets. For then they could say, v'atever happened, a part of them vould survive. And any other government notified about the veapon vould have tried to take out similar insurance. Insurance against accident, if nothing else. Or against . . . oh . . . blackmail, in case Yugoslavia ever got a nihilist dictator like Hitler vas in his day. So there vould have been *some* emigration from Earth. But ve know for sure there vas not. Even if the emigrants left this cluster, spacemen like Monvaingi vould have noticed it and you vould have heard them talk about it."

Donnan yanked his attention from her to her words. They made sense. He'd speculated along some such lines himself, but had been too shaken emotionally to put his ideas in her cool terms, and too busy making war to straighten out those private horrors that inhibited his reasoning about the subject.

"One possibility," he said. "If Kandemir got wind of the doomsday weapon, Kandemir might have seized the opportunity, since the destruction of Earth would then be like shooting fish in a barrel. Yugoslavia and the rest might never had time to organize colonization schemes."

The fair head shook. "I think not," she answered. "Maybe they vere angry men governing Earth's

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nations, but they vere shrewd too. They had to be. Countries, especially little countries, did not last long in this century if they had stupid leaders. The Balkan and Arab politicians vould have foreseen just the chance of attack you mention. Not only Kandemir, but any planet—any pirate fleet, even, if somebody got vun—anybody could blackmail Earth. No? So I do not think they would have bought a doomsday veapon unless lots of spaceships vere included in the package."

An eerie tingle moved up Donnan's spine.

He smote one fist into the other palm, soundlessly, again and again. "By God, yes," he whispered. "You've hit the point that Monwaing and I both missed. The Monwaingi couldn't be expected to know our psychology that well, I reckon. But I should have seen it. The whole concept of the weapon was lunacy. But lunatics are at least logical thinkers."

Sigrid threw back her shoulders. The lilting voice lifted till it filled the room: "Carl, I do not believe there ever vas any such veapon sold. It just does not figure. Most specially not in galactic terms. See, yes, there still vere countries that did not like each other. But these old grudges vere becoming less and less important all the time. There vas still some fighting, but the big atomic var never happened, in spite of almost every country having means to fight it. Does that not show the situation vas stable? That there never vould have been a var? At least, not the var everybody vas vorrying about.

"Earth vas turning outvard. The old issues vere stopping to matter. V'at vas the use of a doomsday veapon? It vould have been a Chinese vall, built against an enemy that no more existed. For the same price, buying spaceships, buying modern education for the young people, a country could have gained ten times the power . . . and achievement . . . and safety. I tell you, the suicide story is not true."

FOR a moment neither of the others spoke. They couldn't. Ramri's feathers rose. He swelled his throat pouch and expostulated, "But we know! Our intelligence made that Xoan admit—"

"He lied!" Sigrid interrupted. "Is your intelligence alvays correct?"

"Why? Why?" Ramri paced, not as a man does, but in great leaps back and forth between the walls. "What could Xo gain from such a lie? No conceivable advantage! Even the individual who finally confessed, he got nothing but clearance for his ship to leave Monwaing. Absurd!"

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Donnan gazed long at his friend before he said, "I think you'd better own up, Ramri: your general staff was had. Let's go on from there."

The end of his nightmare had not eased the wire tautness in him. He bent over the sheet of paper on his desk as if it were an oracular wall. The unhuman symbols seemed to intertwine like snakes before his eyes. He focused, instead, on the Roman analogues which had been written in parallel columns.

A B C D E F
M N O P Q MR
BA : NQ
ABIJ : MOQMP

Transliteration of some Delphic language—No, no, don't be silly. "A" through "AL" simply stands for the first twelve numbers of the duodecimal Kandemirian system, with "L" the sign for zero. So —

It was like a knife stab. For an instant his heartbeat ceased. He felt a sense of falling. The pulse resumed, crazily, with a roaring in his ears.

AS if over immense distances, he heard Ramri say, making an effort at calm:

"By elimination, then, Kandemir does seem to be the murderer planet. Possibly they engineered this Xoan matter as a red herring. And yet I have never felt their guilt was very plausible. That is one reason why I was so quick, however unwilling, to suppose Earth had indeed committed suicide."

"Vell," said the girl, "I am not so familiar vith local situations, but I understand the Kandemirians are—or vere, before you broke their power—merciless conquerors. Earth vas still another planet to conquer. And then the Russians actively helped Vorlak."

"Yes, but Tarkamat himself denied to Carl—contemptuously—that the Soviet assistance was significant. Which does sound reasonable. What indeed could a few shiploads of small arms and a handful of student officers amount to, on the scale of interstellar war? If necessary, Kandemir could have lodged a protest with the Soviet government, and made it stick by a threat of punitive action. The Russians would have backed down for certain. Because even a mild raid from Kandemir would have left them so brutally beaten that they would be helpless in the face of their Western rivals. In fact, Tarkamat proved very knowledgeable about Terrestrial politics. He remarked to Carl that if and when he decided to overrun Earth, he would have used native allies more than his own troops. *Divide et impera*, you know. Yet for all

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the strength and information he had, Tarkamat never even bothered to announce that he knew about the Soviet action.

"Why should he lay Earth waste? Its biochemistry was similar to that of Kandemir. Which made the living planet a far more valuable prize than the present lump of rock, which can only be reseeded with life at great difficulty and expense, over a period of decades. The nomads are ruthless, but not stupid. Their sole conceivable motive for sterilizing Earth would have been as a terrible object lesson to their enemies. And then they would have boasted of what they did, not denied it."

Donnan forced himself to take the paper in his hand and punch some keys on his desk calculator. He had never done harder work in his life.

"Yes, yes, you speak sensible," Sigrid was agreeing. "Also, as ve have said, if they vere going to interdict the Solar System, they could have done the job better than vith obsolescent missiles badly programmed. For that matter, Mr. Ramri, v'y should they patrol the System at all? They could have taken it over as part of the general settlement after they von the var, as they expected to vin. Until then, just an occasional visit to make sure nobody vas using it against them vould have been enough. There was nothing to gain from the missiles."

The calculator chattered. Donnan's brain felt like a lump of ice.

"Do you imply that Kandemir never even placed those missiles there?" Ramri asked. "But who did?"

Numbers appeared on the calculator dial. The equation balanced.

Donnan turned around. His voice was flat and empty. "I know who."

"What? *Hvad?*" They stepped closer, saw his expression, and grew still.

AN immense, emotionless steadiness descended on the surface of the man. He pointed. "These notes scribbled inside that one missile," he said. "What they were should have been obvious all along. The women failed to see it because they had too much else to think about. They dismissed the whole question as unimportant. But I should have realized the moment I looked. You too, Ramri. I suppose we didn't want to realize."

The golden eyes were level upon him. "Yes? What are those symbols, then, Carl?"

"A conversion table. Jotted down by some technician used to thinking in terms of one number system, who had to adjust instruments, propulsion gear and con-

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trol calibrateds that were in another number system.

"The Kandemirians use a twelve-based arithmetic. These other numerals are based on six."

The girl bit her lip and frowned, puzzled why Donnan was so white. Ramri stood as if carved until, slowly, he spread out his two three-fingered hands.

"It checks," Donnan said. "The initial notation alone, giving the numbers from one to six in parallel rows, is a giveaway. But here are the conversions of some other figures, to which I reckon this or that dial had to be set. The squiggle in between, that Sigrid represented by a colon, has to be an equality sign. BA is 25 in Kandemirian; so is NQ in the other system. ABIJ and MOQMP both represent 2134. And so on. No doubt about it."

Ramri made a croaking noise. "A subject race," he managed to articulate. "I, I, I think the Lenyar of Druon . . . the nomads conquered them a long time ago . . . they did formerly employ—"

Donnan shook his head. "Nope," he told them. "Won't go. You yourself just listed the reasons for calling Kandemir innocent of this particular crime."

Understanding came upon Sigrid. She edged away from Ramri, lifting her hands to fend him off. "Monvaing?" she breathed.

"Yes," said Donnan.

"No!" Ramri yelled. "I give you my soul in pawn, it is not true!"

"I never said you were party to the deed yourself," Donnan answered. A dim part of him wanted to take Ramri in his arms, as he had done the day they first saw murdered Earth. But his feet seemed nailed to the floor.

HIS voiced proceeded, oddly echoing within his skull: "Once we grant Monwaing did this, the pieces fall into place. The only objections I can see are that Monwaing wouldn't destroy a good market and a potential ally, and in any event would be too decent to do such a thing.

"But Ramri, Monwaing isn't a single civilization. You didn't recognize these numerals here. Nobody on your planet uses them. However, there are Monwaingi planets you've never seen. And some of the civilizations developed by your race are very hard-boiled. The biotechnic orientation. If it's okay to manipulate life in any way convenient, then it's okay to destroy life on any scale convenient. Tantha wouldn't do so; but Laothaung, say, might. And the central government is dominated by Laothaung and similarly minded Societies.

"Those cultures aren't traders, either. Earth as a market meant little to them. What did concern

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them was Earth as a keg of dynamite. Remember, Resident Wandwai admitted we were too poor and backward as yet to be of military help! And he admitted knowing about that provocative treaty between Russia and Vorlak. Laothaung might well have feared that Kandemir would seize the excuse to invade Earth—thereby spreading the war to Monwaing's most vulnerable flank.

"Oh, they didn't hate humans. I'm sure we survivors would have been well treated, had we stayed in their sectors. But neither did they love us. We, like any living creatures, were just phenomena, to be dealt with as suited their own ends. If they destroyed Earth, they could pin the blame on Kandemir by such methods as planting captured Kandemirian missiles in orbit...but not making the missiles too damned effective. That was quite a sound calculation, too. Anger against Kandemir helped out the war effort no end.

"To play safe, they prepared a second-line cover story. I don't know whether the Xoan was bribed or forced to tell that whopper about the doomsday weapon. I do know the story was well concocted, with a lot of detail such as only an alien race that had close acquaintance with Earth could have gotten straight. However, wasn't it a little too pat, that Wandwai had a copy of a top-secret film right in his own regional office? That struck me odd at the time.

"What else might Monwaing gain by blasting Earth? The planet itself, in due course. They figured on winning the war, as belligerents generally do figure. Because of the ecological differences, Monwaing could only colonize Earth if it was sterile first. Your setup of many different cultures, each wanting at least one world to itself, makes you actually a good deal more imperialistic than Kandemir ever was. You simply aren't so blunt about it.

"Yeah. I've no doubt left in my mind. Monwaing killed our planet. A real slick job. The only thing they overlooked was what a helpless, fugitive shipload of surviving humans might end up doing. You can't blame them for not foreseeing that. I wouldn't have myself."

Donnan stopped talking.

"YOU have no proof," Ramri keened.

"No courtroom proof," Donnan replied. "Now that we know where to search, though, I don't doubt we can find it."

"What . . . do you plan . . . to do, Carl?"

"I don't know," Donnan admitted heavily. "Sit on the lid till the Kandemirian business is fin-

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ished, I reckon. Meanwhile we can gather evidence."

"*Ah, nej,*" Sigrid cried out. "Not another var, so soon!"

Ramri shuddered. And then the beaked head lifted. Sunlight came in a window and blazed along his feathers. He said with death in his tone: "That will not be necessary. Not for you."

The frozenness began to break in Donnan. He took an uneven step toward the being who had been his friend. "I never thought *you*—" he stammered. "Only the smallest handful of your race—"

Ramri avoided him. "Of course," he said. "The majority of us shall restore our honor. But this may not be done easily. More than a few individuals must suffer. More, even, than one or two Societies. You need not concern yourselves in this affair, humans. You must not. It is ours.

"I hope the settlement and cleaning need annihilate no more than our mother planet."

He strode jerkily toward the door. "I shall organize the search for positive evidence myself," he said, like a machine, never looking back at them. "When the case is prepared, it shall be put before the proper representatives of each Society. Then the groundwork of action must be quietly laid. I expect our civil war will begin in about one year."

"Ramri, no! Why, your people are the leaders of this whole cluster—"

"You must succeed us."

The Monwaingi went out. Donnan realized he had never known him.

Sigrid came to give the man what comfort she was able. Presently they heard an aircar take off. It hit the sky so fast that it trailed a continuous thunderbolt, as if new armadas were already bound for battle.

They looked at each other. "What have we done?"

—POUL ANDERSON

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GALAXY'S 5 Star Shelf

THREE HEARTS AND THREE LIONS by Poul Anderson. Doubleday & Co., Inc.

ANDERSON REMINDS one of Walt Disney. He also owns an Adventureland, Tomorrowland, Who-Done-It-Land. In this free-wheeling opus, remindful of Twain's Connecticut Yankee and the Pratt-de Camp Harold Shea series, Anderson entertains his reader in Fantasyland.

His modern Danish hero, pinned down by Nazi fire on a Jutland beach during an exploit by the underground, is inexplicably transported to the legendary era of Charlemagne, Morgan le Fay and the land of Faerie. Though retaining total recall of 20th century knowledge and although he is evidently a local knightly hero of stature, he suffers total amnesia concerning the era into which he is thrust. He is also, apparently, a key figure in the impending fight to the death between the forces of Law, represented by Mankind, and the Pharisees, Faerie's minions of Chaos, judging by the epic attempts on his life. Only

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his physical prowess, mental dexterity and a heap of help from a for-real swan maiden, a three-foot-high dwarf and a converted Moslem knight save him time and again from ending the story too soon.

Rating: ****

TIGER BY THE TAIL by Alan E. Nourse. David McKay Co., Inc.

AFTER PUBLISHING three excellent volumes of Nourse juveniles, McKay presents his first offering of science fiction for adult digestion.

All nine of the stories rate fine to excellent and would be standouts in any company. 'Tiger by the Tail" and "PRoblem" are examples of the chill ending that Nourse does so well. "Family Resemblance" and "The Coffin Case" demonstrate effectively that SF and humor can be completely compatible and are a showcase for Dr. Nourse's store of medical knowledge.

Even the straightforward "Brightside Crossing," an expedition's attempt at the crossing during perihelion of Mercury's hot side, and "The Native Soil," exploitation of the antibiotic muck as well as of the natives of Venus, are a bit more in his telling than they might have been.

Rating: ****1/2

THE DRUMS OF TAPAJOS by Col. S. P. Meek. Avalon Books.

FOR THOSE old-timers who have wondered for years whatever became of Capt. S. P. Meek, we now have the answer. He wrote a slew of animal stories, made colonel and retired to Florida.

Meanwhile, Avalon has done a service by resurrecting his first SF novel. A good one it is, too, despite its age. The editors have wisely decided against revision and here is much the original yarn as it appeared in *Amazing Stories* over 30 years ago.

A hidden-Atlantis type story, it was written before modern aircraft removed "Terra Incognita" from world maps. However, on rereading, even discounting the intense nostalgia, the sense of high adventure was still there, despite the years.

Rating: ****

BELIEVERS' WORLD by Robert W. Lowndes. Avalon Books.

LOWNDES, INVOLUTED, book is almost as good an example of devious plotting as the works of Van Vogt. As a start, he has placed his expatriate Earthman here in a hyperspatial three-planet system, colonized millenia ago by Terra but lost and then refound. The three worlds have

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all reached an identical plane of scientific achievement, all far ahead of Earth because of the speed-up in time rate of their hyperspace, but mutual distrust has caused a bitter schism among the three.

All have developed a religion similar to Mohammedanism, in which ritual has become the ruling force in everyday life. The True Word, however, is based on the teachings of Ein (Einstein) and each of the three sister worlds lays claim to its own uniquity and the others' iniquity.

To excerpt the plot further would lead to confusion. There is, nevertheless, plot galore, action galore and gore galore and might appeal to those who like to think quick, not deep.

Rating: **1/2.

FACIAL JUSTICE by L. P. Hartley. Doubleday & Co., Inc.

BIG BROTHER'S dictatorship in Orwell's *1984* was malevolently benevolent. Hartley's disembodied but all-powerful Voice is pure benevolence in the sense of "If this is what you want, this is what you'll get."

The Voice has built a Utopia after leading half of England's two million survivors of WW III from their underground refuge to the surface, against the active opposition of the other half. In this Utopia of Uniformity, even faces have been standardized.

The story's pretty heroine, after refusing a Standard Beta face, is given one anyway during a period of unconsciousness following an accident. This treacherous alteration of features produces a far more violent change of character. Having become an active subversive, she discovers to her dismay that the Dictator welcomes subversion, subverting it into something far removed from its original shape and intent.

Although short on drama and long on talk, the book is learned, thoughtful and provocative.

Rating: ***1/2

SONS OF THE WOLF by Adam Lukens. Avalon Books.

LUKENS'S THIRD book for Avalon (*Conquest of Life, The Sea People*) hews to his previous path of too much in a small container. His plots are like old Mack Sennett one-reelers. Characters and plot developments dash in and out, out and in.

A werewolf yarn with a symbiotic explanation and a twenty-fourth century backdrop, it has a fine twist in that the werewolves, atavisms from the Middle Ages, are thrown into a blasé future that has seen much more monstrous creatures from the stars.

Despite the aforementioned

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frenetic action, loose ends remain ungathered and good story potential remains almost totally unrealized.

Rating: **

PAPERBACK NEWS

ACE BOOKS: *Adventures on Other Planets,* edited by Donald A. Wollheim. Five outworld novelettes by Simak, Van Vogt, Dee, Leinster and Williams . . . *Sentinels of Space* by Eric Frank Russell. Ace's second printing of this thriller . . . *The Weapon Shops of Isher* by A. E. Van Vogt. Ditto for this famous Van Vogt. . . . *The Best from Fantasy and Science Fiction Fifth Series* edited by Anthony Boucher. '54, '55 and '56 are the years of vintage . . . *The Swordsman of Mars* by Otis Adelbert Kline. E. R. Burroughs's competitor in the '30s. . . . *Galactic Derelict* by Andre Norton. A full five-star selection in hard covers . . . *More Macabre,* edited by Donald A. Wollheim. A follow-up of his fantasy anthology. The *Macabre Reader* . . .

ACE SF CLASSICS: *Master of the World* by Jules Verne. The classic of title plus *Robur the Conqueror* under one soft cover . . . *The Greatest Adventure* by John Taine. Mathematician Eric Temple Bell's Lost World.

DOLPHIN BOOKS: *The War of the Worlds and the Time Machine* by H. G. Wells. Two of the most famous SF yarns extant . . .

BALLANTINE BOOKS: *Best Stories of H. G. Wells.* A king-size paperback like the above of immortal yarns . . . *Strangers from Earth* by Poul Anderson. Eight assorted Anderson shorts . . . *Turn Left at Thursday* by Frederik Pohl. Seven yarns, mainly from *Galaxy* . . . *So Close to Home* by James Blish. Also a one-man show . . . *A Cupful of Space* by Mildred Clingerman. Ditto, except for gender . . . *Tales of Love and Horror,* edited by Don Congdon. A dozen chillers . . . *The Doll Maker* by Sarban. A worthy successor to *The Sound of His Horn* . . . *New Maps of Hell* by Kingsley Amis. The controversial analysis of SF . . . *Guardians of Time* by Poul Anderson. Four novellas from F&SF . . . *Slan* by A. E. Van Vogt. A modern classic . . . *Ringstones* by Sarban. Another expert horror tale . . . *30 Day Wonder* by Richard Wilson. Do-good aliens drive Mankind nuts . . . *Trouble with Lichen* by John Wyndham. Wyndham's skill transforms old-hat plot . . . *Drunkard's Walk* by Frederik Pohl. 1960 *Galaxy* novel of longevity . . . *The Other Passenger* by John Keir Cross. Icy-fingered chiller . . . *Bypass to Otherness* by Henry Kuttner. #1 of 3 volumes of lesser-known Kuttner . . . *Not without Sorcery* by Theodore Sturgeon. The famous

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and fantastically horrible "It" alone is worth the price . . . *Some of Your Blood* by Theodore Sturgeon. A novel of horror done to a turn. . . .

PYRAMID BOOKS: *Orbit Unlimited* by Poul Anderson. Man's rebirth on a hostile planet . . . *Venus Plus X* by Theodore Sturgeon. Man's rebirth in Utopia — but — Man? Utopia? . . . *Against the Fall of Night* by Arthur C. Clarke. Mankind's dead end and beginning . . . *Voyage to the Bottom of the Sea* by Theodore Sturgeon. From the picture . . . *The Unexpected,* edited by Leo Margulies. 11 oldtimers from *Weird Tales* . . . *The Synthetic Man* by Theodore Sturgeon. A new title for *The Dreaming Jewels* . . . *The Green Rain* by Paul Tabori. A rainstorm greenwashes Man's color problem . . .

SIGNET BOOKS: *Beyond This Horizon* by Robert A. Heinlein. Heinlein classic in print again . . . *Skyport* by Curt Siodmak. Putting a deluxe hotel into orbit . . . *Moonraker* by Ian Fleming. A pre-Sputnik first-rocket yarn . . . *The Status Civilization* by Robert Sheckley. A master of the plot twist . . .

GOLD MEDAL BOOKS: *Rogue Moon* by Algis Budrys. Spectacular invention, plot and characterization . . .

AVON BOOKS: *He Owned the World* by Charles Eric Maine. A Wellsian "Sleeper" . . . *The Wailing Asteroid* by Murray Leinster. SF's elder statesman again.

ACE DOUBLE NOVEL BOOKS: *The Big Time* and *The Mind Spider* by Fritz Leiber. A *Galaxy* novel and a group of shorts . . . *Sanctuary in the Sky* and *The Secret Martians* by John Brunner and Jack Sharkey. Two space operas. . . . *The Beast Master* and *Star Hunter* by Andre Norton. Two Norton space-adventures . . . *The Angry Espers* and *The Puzzle Planet* by Lloyd Biggle, Jr. and Robert W. Lowndes. Earth vs. mindreaders and an SF murder mystery . . . *Beyond the Silver Sky* and *Meeting at Infinity* by Kenneth Bulmer and John Brunner. Man a water dweller and Earth against a world of primitives . . . *Vulcan's Hammer* and *The Skynappers* by Philip K. Dick and John Brunner. Earth ruled by machine and one man the key to the universe . . . *Bring Back Yesterday* and *The Trouble with Tycho* by A. Bertram Chandler and Clifford Simak. Time tamperers and moon salvage . . . *No Man's World* and *Mayday Orbit* by Kenneth Bulmer and Poul Anderson. Two freewheeling space operas . . . *I Speak for Earth* and *Wandl the Invader* by Keith Woodcott and Ray Cummings. Earth must prove itself to the Galaxy and an oldie by a real oldtimer.

— FLOYD C. GALE

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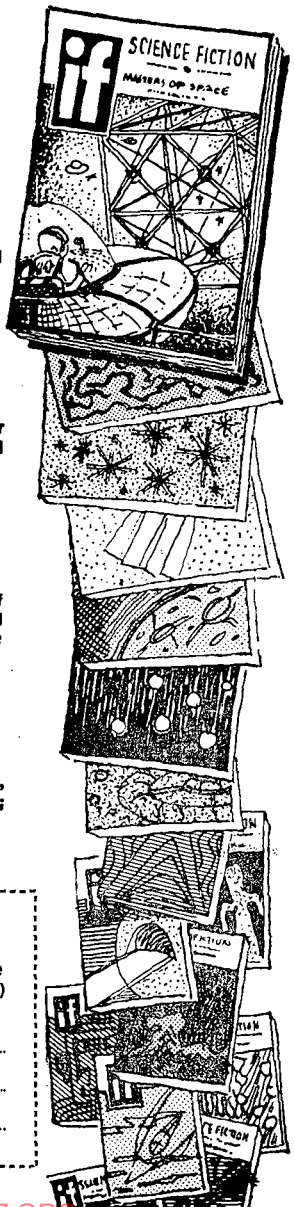

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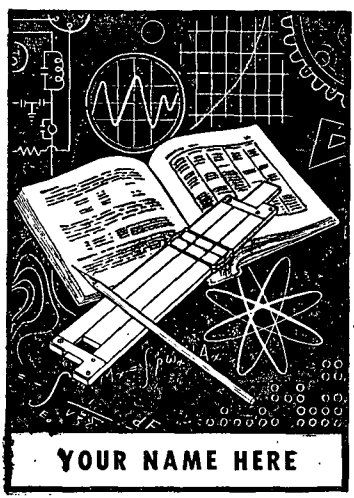

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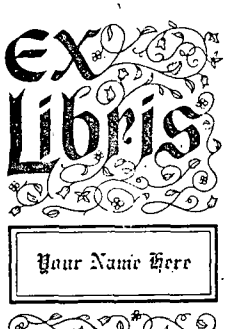

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